

Florida

Devil's Millhopper
Spring Shad

Fishing • Hunting
• Conservation •
Outdoor Recreation

WILDLIFE

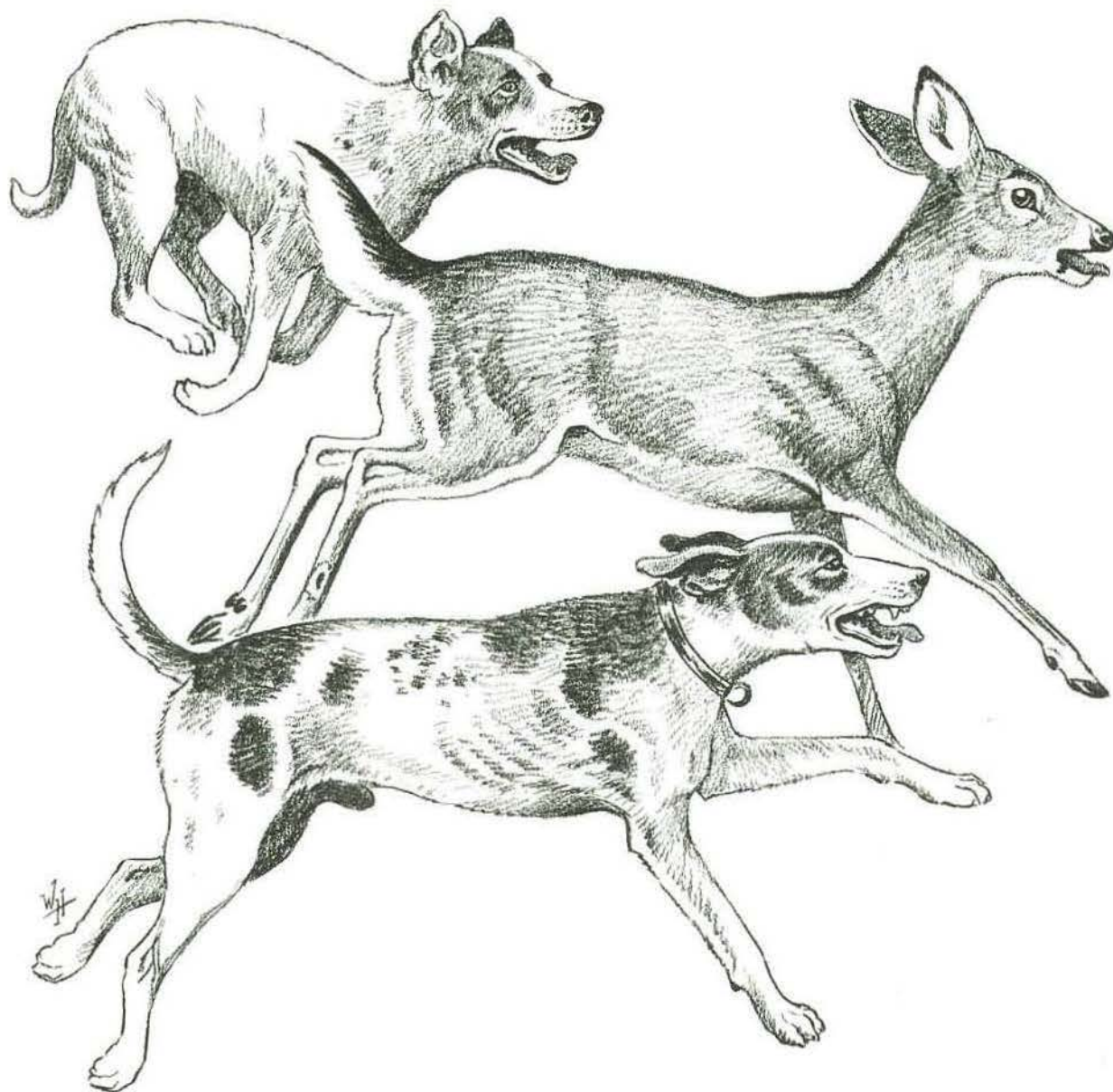
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The Florida Magazine for all Sportsmen

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FREE RUNNING DOGS DESTROY WILDLIFE



Florida WILDLIFE

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Publications Department

BILL HANSEN Editor

WALLACE HUGHES Art Director

GENE SMITH Editorial Assistant

NANCY CHOIKE Production Assistant

C. L. SATTERFIELD Circulation

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The Cover

For something continuously cheerful, the Purple Martin provides an interesting bird show with burbling song, graceful flight, fastidious preening and devoted parenthood, from February through September. See page 34.

From A Painting By Wallace Hughes

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Most people agree the cottontail is the most popular small game animal in the country, yet it has not achieved that distinction in Florida, where it is the only game animal without bag limit or closed season. Even so, it is little hunted. Few hunters bug the bunny when bigger game beckons.

Its keen senses of hearing and smell, plus its noted fleetfootedness, make it a most worthy quarry. Testing the breeze, left, the alert cottontail may elect to "freeze" temporarily for protection. But if truly alarmed, he'll take off every time, right. Muscular hind legs are his primary line of defense.

the cottontail

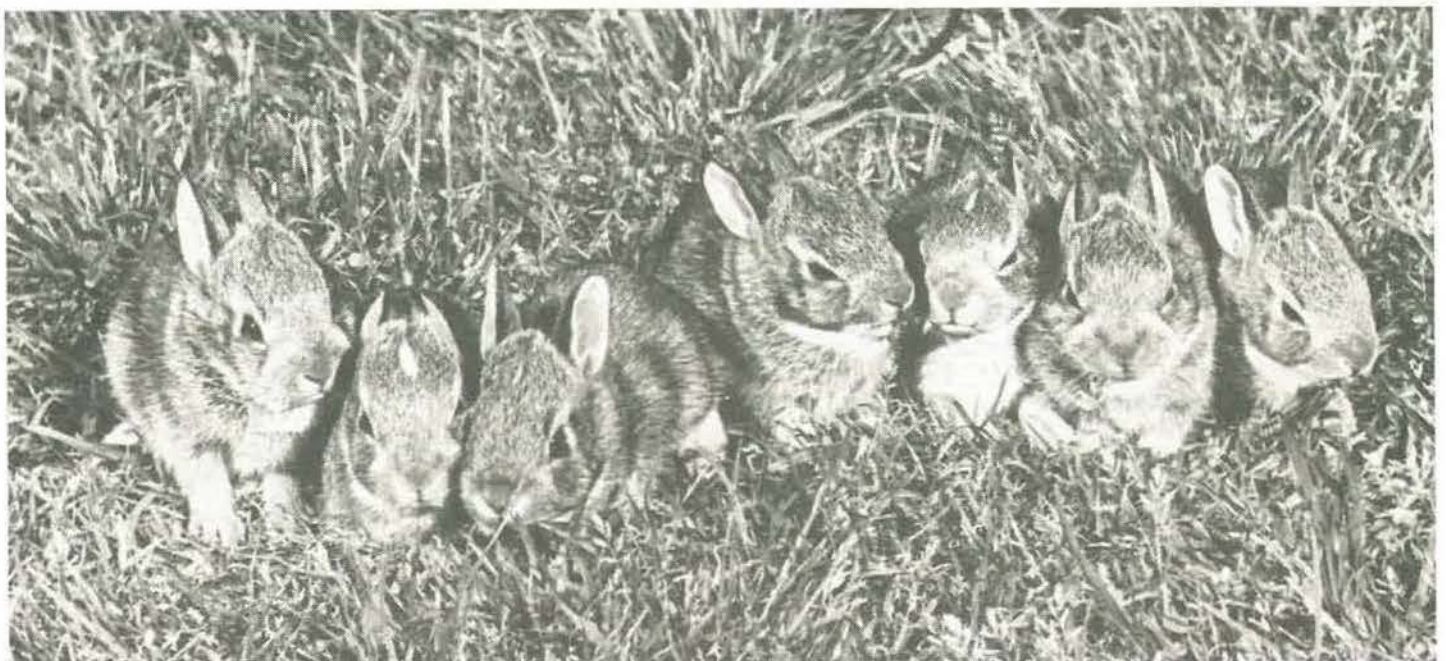
Cottontails breed early and often, beginning in the spring. Thus, they keep ahead of heavy losses through predation by foxes, bobcats, large hawks, and rattlesnakes. They produce three or more litters a year, of four to six young per litter—with exceptions, as photo at far right proves. Buck cottontails vie energetically for attentions of does, kicking and jumping in harmless tussles. About 28 days after mating, the bare, blind young ones are born in a fur-lined, bowl-shaped bed hidden in tall grass or brush. They are weaned in three weeks or less, and mature rapidly, losing their white forehead beauty mark after a while. They breed at nine or 10 months old.





An unlikely sport for a cottontail is swimming, but since all mammals can manage it, the one at left isn't endangered by his ducking. Marsh rabbits, smaller cousins of cottontails, are adept at it since they live around water, salt and fresh. Florida has plenty of both kinds. Incidentally, marsh rabbits creep rather than hop in the familiar bunny gait. All rabbits are strictly vegetarian, feeding mostly at night, sitting in beds, or "forms," during the day.—*Gene Smith*

Photos By Leonard Lee Rue III



MEET YOUR COMMISSIONER



HOWARD ODOM, Marianna

HOWARD ODOM, 45, Marianna businessman, community leader, and a long-time sportsman-conservationist, was appointed to the Game and Fresh Water Fish Commission in early January by Governor Reubin Askew. Odom succeeds Dr. Richard H. Schulz, also of Marianna, whose 5-year term expired.

The new commissioner is a native Alabamian, born near Ashford in Houston County, which adjoins Jackson County, Florida. He is a graduate of Ashford High School.

He has been a Florida resident since 1951, when he moved to Marianna and established a monument business. He is now president of Odom Tank Company, Marianna, which specializes in the maintenance and painting of municipal water tanks, fuel oil tanks, highway bridges, and similar structures. The firm has operations in Florida, Alabama and Georgia.

Odom is actively engaged in beef cattle production on his farm, located northwest of Greenwood in Jackson County, and is also a land developer. He is currently building a residential subdivision in Marianna.

Public service is very much a part of Commissioner Odom's background. He was a member and secretary of the former Florida Board of Parks and Historic Memorials, to which he was appointed in 1955 by Governor LeRoy Collins.

Other official posts held include two terms as

president of the Marianna-Jackson County Chamber of Commerce and six years on the Jackson County Board of County Commissioners.

Odom is a Mason, a Shriner, an Elk, a U.S. Army veteran, and a member of the American Legion. He is an active member of the Jackson County Conservation Club. While serving as chamber president he was named Outstanding Young Jaycee of the Year.

Commissioner Odom's hobbies include aviation, but he leans particularly to fishing and bird hunting for outdoor recreation. He is an avid dove and quail hunter, and, on occasion, hunts all game species. He owns bird dogs and deer hounds and points out that the entire family enjoys hunting.

In addition to proven business ability and an already noteworthy record of public service, Odom brings to the Commission a sincere desire to further the interests of natural resource conservation and related matters. Besides fishing improvement and the preservation of good public hunting, he also expresses awareness of a need for stepped-up conservation education in Florida schools.

"I think today's youth are to be commended for their concern for a cleaner environment and for their work toward that end. I also believe they need to know more of what the Game and Fish Commission is doing to assure that they and their children will be able to enjoy good hunting and fishing in the years ahead. Knowledge of game and fish management work and wildlife law enforcement functions are all important, I feel, in understanding how today's state conservation agency fits into the overall environmental protection and outdoor recreation picture," he says.

In a similar vein, Commissioner Odom expresses a well-founded concern that segments of the general public often fail to acknowledge the role hunters and fishermen play in supporting natural resource conservation in Florida. He cites the continual push for gun controls and increasing pressure from anti-hunting groups as very real threats to future programs of the Game and Fresh Water Fish Commission and, more broadly, to wildlife conservation itself.

"I deeply appreciate the confidence Governor Askew has shown in me by this appointment, and I hope to live up to all that is expected of me during my term. It is indeed an honor to have been asked to serve the people of this state as a member of the Commission," says Odom, whose practical, down-to-earth approach to problems, and whose outspoken disdain for "red tape," will undoubtedly serve him well in the years ahead.

Mrs. Odom is the former Eunice Ingram, also of Ashford. They have a son, John H., and a daughter, Sandra, who is Mrs. Steve Stewart, also of Marianna. The Stewarts are the parents of a 9-month-old son, Steven Lamar. The family attends the Church of Christ, Marianna. ●

Famous Fishermen

FISHING

some fishermen become well-known by tooting their own horns and through good publicity stunts—but they're rarely heard of outside their area

By CHARLES WATERMAN



LIKE PICKING A WIFE or a racehorse, there's considerable difference of opinion as to just what constitutes a master fisherman.

Some observers are not satisfied to come up with master billfishermen or bass fishermen but go so far as to set forth requirements for master all-around fishermen. All of this is good clean fun, but it is interesting to note that most of those who set forth the requirements just happen to have fulfilled the ones they set forth. For example, if a fishing authority says that to be a real master angler you must have won a distance-casting contest and caught a 10-pound bass on four-pound monofilament line, you'll probably find the guy has won a distance contest and caught the aforementioned bass on the aforementioned line.

There is a cult of trout fishermen who use nothing but flies—generally small ones on very light leaders—who will tell you frankly that they consider all other forms of angling as crude and elemental. There are also big-game fishermen who feel anything that weighs less than 100 pounds should be fished for only by children. Then, of course, there are the competition bass fishermen who meet in nose-to-nose tournaments and build their own records of pounds caught, points accumulated, and money collected.

The strangest facet of all is the highly localized fame of some of these people, many of whom would be stunned to learn that they are unknowns out of their own circle. I have taken great interest in a little private research about fishermen's fame. My report would be more enlightening if I named names, but it would be cruel to do so.

In the North and West I have found no fisherman who recognized the names of bass-fishing champions. I could find no Florida resident who had ever heard of a California steelhead fisherman who has often been called the greatest angler of all—in steelhead circles. One Florida angler who was once voted the best fisherman in the world by a pretty savvy organization (and it was a good choice) is completely unknown in the Northwest. I found no fisherman who had ever heard his name. I found no one in Maine who had ever heard of some Florida fishermen whom I had thought to be quite famous. World's casting champions are almost completely unknown outside the casting game.

Does this mean there are no anglers of world-wide fame? No, there are some world-famous fishermen all right, but most of them have become famous through careful publicity campaigns. Their ability has little to do with their reputations, even though some of them may be excellent fishermen. Some writers became famous fishermen through writing about it, even though they have never risked their amateur standings.

The truth is that if you keep telling people you are the greatest fisherman in the world, a surprising number will begin to believe it. Some of the best-known anglers have achieved their standing almost entirely through their own personal promotion.

Stunt fishing is a good way if you want to be famous. Go out and catch a very big fish on very light line, announce that it is a new world's record, keep pounding on it, and the world may accept the fact that a 30-pound catfish on six-pound monofilament is the greatest angling achievement of all time. Then before they forget that one, go and catch a bigger catfish on lighter line, or catch a carp left-handed or something. It's not so much the achievement as the publicity. You might even begin to believe it yourself.

But if most fame is restricted to only a small segment of the fishing world, it can be pretty strong where it does exist. There is a lot of fishing hero worship, some of it directed at individuals who are very ordinary fishermen of very limited experience. Publicity made the difference. I have read stirring eulogies of great anglers, pictured as titans of angling, but men who got that way by simply assembling some information and setting it forth in book, by lecture, or on television. Nothing wrong with that, but they should be recognized as reporters rather than master fishermen.

By the way, it is pretty tough to be an all-around angler, even a passable one. By and large the most widely-traveled fishermen must do most of their fishing under guidance. No one can learn all the oceans, rivers and lakes.

KEEPING FLY LINE FLOATING high is one of the requirements of good casting, for it's a simple matter of avoiding too much resistance from the water in picking up for the backcast. Much of recent fly line

(Continued on next page)

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development has been aimed at making the thing float.

The Cortland Line Company is now making a floating line called Micro-Foam which seems to stay higher on the water than anything I've used and casts well too. I've had no chance to test it for durability but have no reason to believe it won't keep on casting and floating.

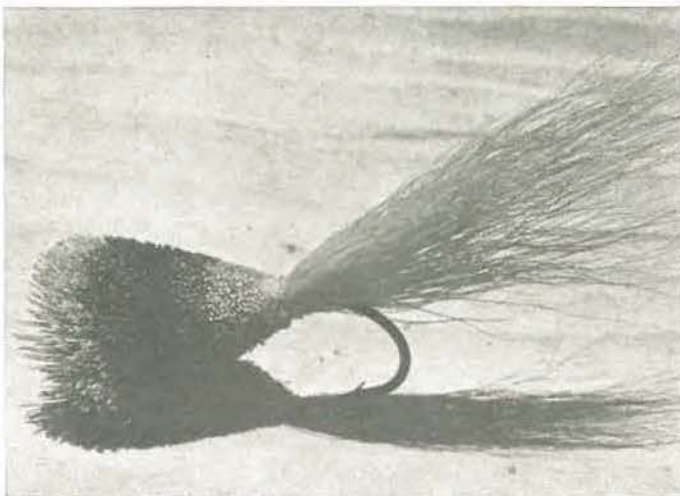
Many fly lines come these days with small boxes of line cleaner, which serves the same purpose as some of the waterproofing concoctions of yesterday. Not only does the cleaner get the algae and other gunk off your line, it actually keeps the water away from it. That helps, even though brand new lines may float like thistles before dirt gets to them.

TWO OR THREE YEARS AGO I got my hands on some hair bugs tied by H. G. Tapply, famous fisherman and hunter and writer of reams of good outdoor dope. The bugs worked well in Florida and tore up the smallmouths in New England, Tapply's stronghold. They are beautifully made with just a sprig of tail and a wide forward section that can be popped if you like. "Tap" makes them for fun and does them in exotic colors but says color doesn't make any difference.

Simplicity is the thing in hair bugs. Those with too much in the way of wings don't cast well. One manufacturer showed me some samples with long hair wings projecting at right angles from the bug bodies. Although they were pretty to look at they were of a design that has been a nuisance for us. My wife made some that sounded like a strafing run as they were being cast, twisted the leader, and landed upside down half the time.

Keep hair bugs simple and they work better. If it's a hair frog, a pair of slender legs won't hurt. Maybe a little tail will work for a hair mouse, but widespread wings haven't done it for me.

A hair bug that casts well. Bugs with long, stiff legs or wings can twist leaders and have too much wind resistance.



LATE WINTER and early spring are the best times to find bass moving near potential spawning areas. This is when I catch most of the bigger bass I manage to come by, generally on eelgrass flats. It usually takes considerable scouting to learn when the bass are "on the flats," but the commonest error is to forget that it can be only a few feet from the flats to deeper water and that a bass can make that change with a few switches of its tail.

So a fisherman drifts across a favored flat, sees and feels nothing bassy, and announces the water is too cold or the season is too early. He decides to wait a week and check it again. By that time the fish may have moved over the flat and abandoned it again. Unless it's a spot where they actually do their spawning, it's likely to be an on and off proposition. Today's dead spot can be tomorrow's hotspot.

In shallow water, I believe poor fishing is quite often a matter of fish not being present rather than simply not striking. Whenever you're working a flat, try the edges of it first. It makes sense that fish moving on or off a flat will cross the border at some point and they are likely to cover the beginnings of shallows before going farther out. They may linger near the deep edge for days.

A YOUNG FELLOW who had made it pretty big early in life approached me the other day on the subject of where a fisherman should live if he could have his choice. Since money was no object in this decision I opened my mouth very quickly and then closed it again. I never did give him an answer of any help.

Because my way of making a living can be struggled with in one place about as well as another, I have long sought a dream spot for fishing and dreamed of going to such a place and living out the rest of my days in angling bliss. In fact, I have several times decided I had the perfect spot, but it hasn't worked out that way. You always have to go somewhere else for a large share of your fishing unless you become a really dedicated specialist in one small section of water.

My final advice to the guy with the money, the rod, and the inclination was simply to find a pleasant place to live with several kinds of fishing within a day's drive. Not much help.

IT'S UNNECESSARY to worry about someone else's water pollution because you generally have some right at home. People take it with them.

But one of the more unusual situations exists on Florida's southwest coast in the Everglades National Park area. Here's where people tried to get away from the crowds of our large cities and quickly built a pollution problem of their own.

Most of the small coastal communities have just dumped their sewage into the brackish water. Un-

til recently, that was considered all right, even for towns the size of Everglades City, but the Department of Health and Rehabilitative Services has pushed them into a modern sewage disposal plant, which turns into a pretty expensive thing for folks who had never thought about it.

Now, Ted Smallwood, a lifetime guide of that country, has written letters to Governor Reubin Askew and other state officials saying that sewage problems are getting out of hand all over the mangrove coast. He cites the trailer parks and individual homes as well as the weekend cottages that have sprung up all over Everglades National Park on privately-owned property we always assumed belonged to the Park. He says septic tanks don't do a proper job in most of that country and points specifically to Chokoloskee Island, which has turned into quite a community (it's the end of the road if you head south on the west coast in the direction of Cape Sable).

Chokoloskee, like many other islands of the area, is composed of shell, and that's poor material for septic tank drainage, failing to provide purification before the effluent gets into the most productive "seafood nursery" of the state. Just how much damage sewage has done to the fishing there is anybody's guess, but it will get worse instead of better as people run off into the swamps and take the problems (and sewage) of civilization with them. Even weekend campers can become pollution problems—if there are too many of them.

SCIENTIFIC ANGLERS, the line manufacturers of Midland, Michigan, have come up with what they call Variweight fly lines. These are double tapers (meaning each end tapers down to small diameter with a larger center section)—but the novelty is that the ends are of different sizes.

For example, the light end of one line is a 5½ size and the heavy end is size 7½. In their second

Fishing the edge of hyacinth-bordered grass flat may be totally frustrating one day and productive the very next.



Even weekend canoe campers in Everglades National Park may become a source of dangerous pollution if unchecked.

model, the light end is 7½ and the heavy end is 9½.

So if you try one of those lines on your rod and it doesn't work right you can turn it around on the reel and use the other end. With two lines you could match any of the commonly used rods. However, this is mainly for light fishing and fairly short casts, since the weight-forward line used for much of Florida's heavier fishing isn't made as a "double line." The weight-forward line is of a shape that doesn't lend itself to such economies.

I'M NO SWAMP buggy jockey but I have had occasion to get off the road a few times in Florida when the fishing couldn't be visited from a concrete ramp. The proper vehicle isn't hard to figure out, but when you want the same car to perform for family transportation you have complications. A 4 X 4 outfit is awfully expensive new and most of the used ones aren't turned in until they've reached the stage where car dealers refer to them as "iron."

Of late a lot of swamp stompers are using little rear engine cars like the Volkswagen for getting back on the sorrier sand and the muckier muck. They won't go where a four-wheel drive vehicle will go in most cases but they have one remarkable quality—a couple of defensive tackles can almost carry one out of a bog hole. And if you do not have a couple of defensive tackles along, you can use a little come along and just jack away with the cable hooked to almost any little old tree.

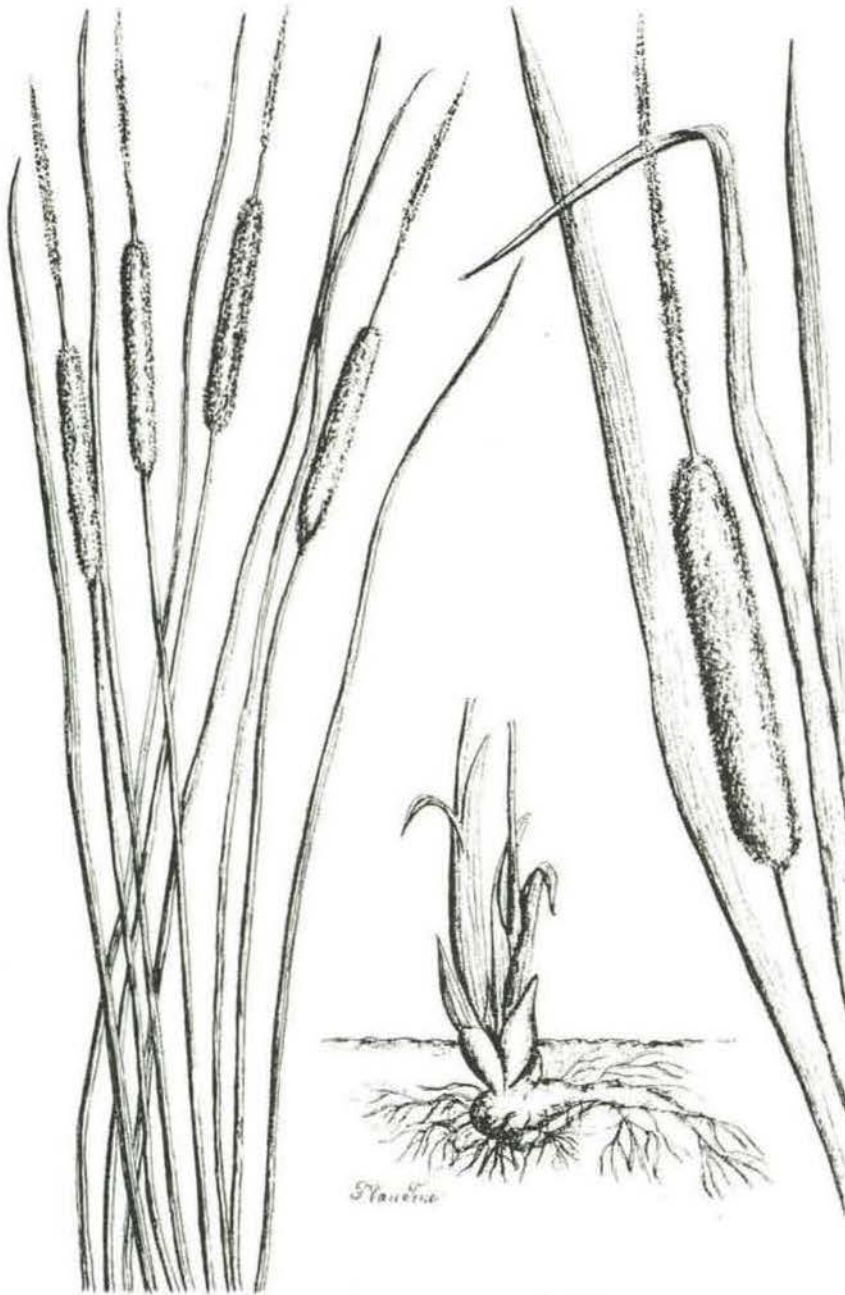
Of course the dune buggy got the whole thing started. A lot of Florida hunters and fishermen have found you don't need a roll bar and snazzy beach body to go hunting and fishing and they're just putting big tires on Volkswagens without other alterations. The rear engine design will take you places that will surprise you. ●

survival in the
wilderness should be
a "snap" when you
know how to open

Nature's Cupboard

By EVELYN VAN TINE

Drawings By Francis Van Tine



Cattail

THE NEXT TIME you vanish into the wilderness on a hunting or fishing trip, why not *really* get away from it all? Leave even the sardines and saltines at home and rely on your knowledge, sharp eyes, and nature's bounty, for food. Eat the weeds at your feet!

In Florida's woods and fields and along her endless waterways, the original health foods grow—all free for the eating. They're good, they're nourishing, and they've all been "kitchen-tested" by the red men who lived off these lands and waters before us.

A great many of the edible wild plants have been familiar to our sight since childhood, although we may not have been aware we can use them as survival food should we ever find ourselves stranded or lost in some remote forest or marsh. During the passage of the four seasons there are

always *some parts of some plants* ready and available as food for the "temporarily disoriented" hunter or fisherman, or for the fellow who simply likes to rough it.

One of the edible wild plants which grows prolifically throughout much of the world and is distributed throughout Florida is the cattail, both the Broad-leaved (*Typha latifolia*) and the Narrow-leaved (*T. angustifolia*). Both grow in the shallow water of ponds, lakes, marshes, and canals.

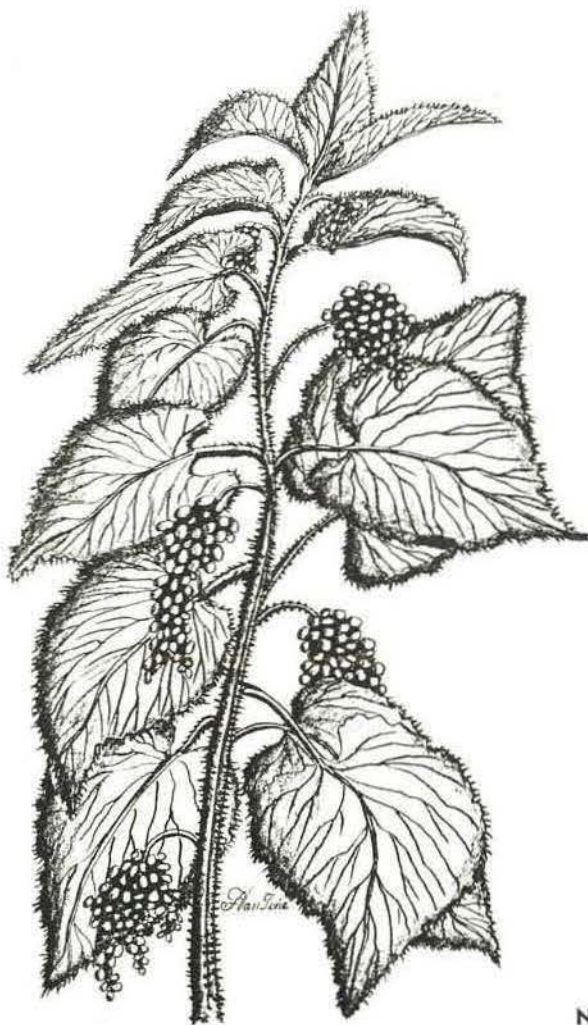
The cattail is one of the most valuable of the American wild plants, and one that was greatly used by the Indians, not only for food but for padding their cradle boards and sleeping mats. Moses' bulrushes were no doubt cattails. Probably the cattail has a greater number of edible parts than any other wild plant.

Most of us are familiar with this plant—the tall,

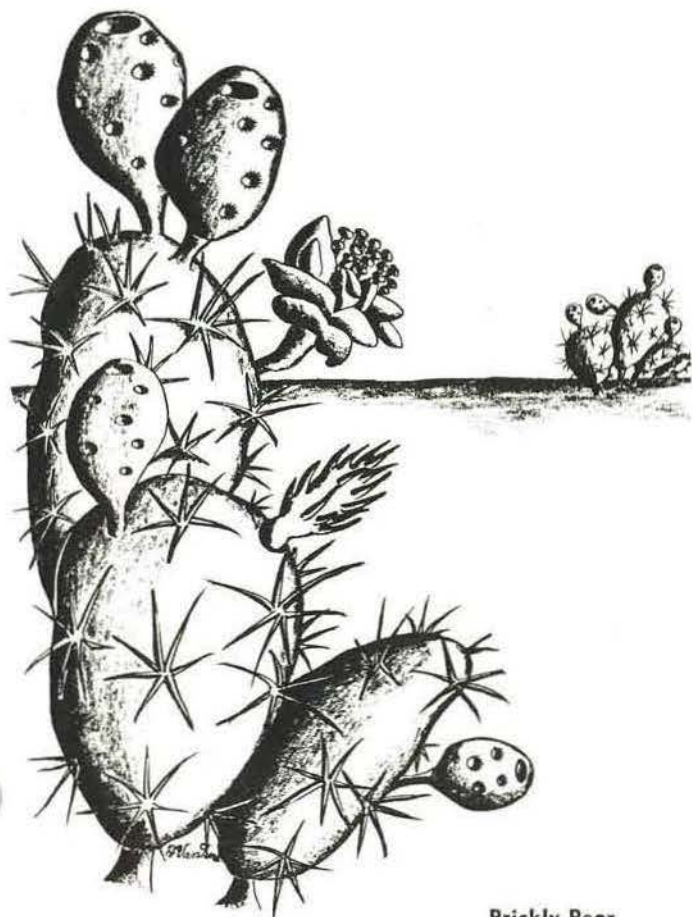
stiff leaves and the flower stalk four to nine feet high with its "tail," or fruit, resembling a brown velvet frankfurter when mature. While young and green, its flower spikes may be eaten raw or cooked, somewhat like an ear of corn. The new green leaf shoots may be peeled and eaten raw as salad when young and tender, or they may be cooked. These have been compared to asparagus. Even the brown pollen, when shaken from the ripe "tail," may be used as flour for bread or cereal, or to dip fish or meat into prior to frying. The powder-fine seeds are also edible, and the roots can be peeled and boiled, or boiled and scooped out of the skin to serve as a potato substitute.

As a supplement to a good meal of game or fresh fish, the cattail is valuable, and it grows in abundance near water. At any time of the year some part of the cattail is available as food, which puts it at the top of the list as a survival food.

The Elderberry (*Sambucus simpsonii*) is about as widespread in habitat as the cattail and chooses somewhat similar places of growth, although it doesn't require as much wetness as the cattail. Found along roadsides almost everywhere, and in marshes, the elderberry offers food at two different times of the year. The tiny white clustered blossoms, resembling Queen Anne's Lace, are edible and can be dipped in egg batter and fried. The result is quite delicious. The taste very much resembles that of fried oysters. The ripe berries are



Nettle



Prickly Pear

also edible. Both blossoms and berries may be eaten either raw or cooked as a delicacy or as emergency rations.

How would you like some cooked *Eichhornia crassipes* along with your fried fish? Would you believe the plain old water hyacinth is edible as long as it's well cooked? (Eating them raw could cause itching.) We can turn the South American import from a prime pest plant in Florida waterways into edible produce by boiling the beautiful lavender flowers or by frying the young inflated bulbs at the base of the leaves. Fried in deep fat they taste like pork "cracklings," crispy and good. Just about every fresh water stream in the state has a prolific growth of water hyacinths, as do many ponds and lakes. There's certainly no shortage of this edible aquatic plant.

A green, brambly vine, which also is considered a pest by some, offers food from two of its parts. It's *Smilax*, several varieties of which have long been familiar to children, who nibble on its young, succulent leaves and call it "bread and butter vine." Various known as greenbrier, cat brier, bull brier, and horse brier, smilax has a delicious asparaguslike flavor as tender young green shoots. These may be boiled or eaten raw. The

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knobby roots of smilax may also be cooked and eaten. Do not eat the berries.

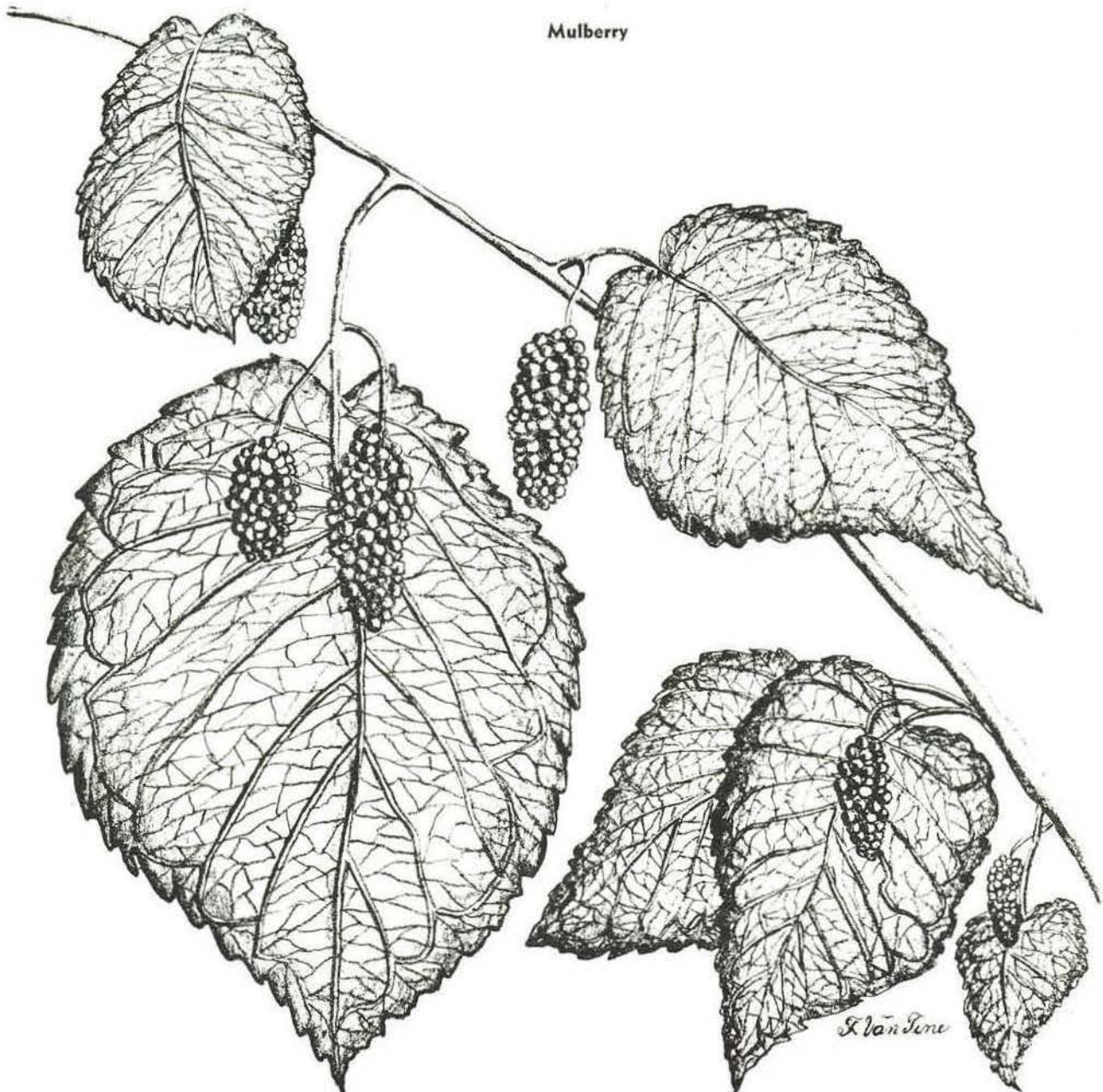
An easily available edible fern prevalent in marshy areas of coastal Florida is the Coast Leather Fern (*Acrostichum aureum*). This huge fern grows to seven or more feet high. The new "fiddlehead" fronds are quite large and easily snapped off when young. They can be eaten as is or cooked like greens. The taste is slightly bitter, like the bitterness in dandelion greens. (Most ferns are on Florida's list of protected trees and plants, but the *Acrostichum* and a few others are specifically exempted under the law. Gathering Coast Leather Fern is permitted.)

Two types of edible cacti grow wild all over the state and are easily available: Southern Prickly Pear (*Opuntia austrina*) and Dillen Prickly Pear (*O. dillenii*). One caution, of course, is to watch

out for the spines! In both forms the ripe fruit, red or purple, may be split and the pulp eaten. It has a somewhat sweet strawberry or pineapple taste. In both, the joints also are edible, raw or cooked. The tender, smaller joints may be boiled; the mature joints, with thorns removed, may be baked, roasted, or dried like apples for future use.

Another "handle with care" plant is Stinging Nettle (*Urtica dioica*), which is of widespread distribution. It should not be handled with bare hands, nor should it touch any part of the skin. But believe it or not, stinging nettle makes delicious cooked greens that are similar to spinach. Most of us have learned to identify nettle purely out of precaution. Now, we can identify it for food.

Still another common Florida plant which can inflict damage to the careless, yet is edible as an emergency food, is Sawgrass (*Cladium jamaicensis*), which grows in and near swamps and marshes,



both salt and fresh. With leaves from five to 10 feet long, each with saw "teeth" on both edges and on the back of the center rib, this plant can inflict deep, painful cuts. Handled with due caution it may be gathered and the center, or heart, of the base eaten raw as a snack or cooked as a dinner vegetable. It much resembles swamp cabbage in taste.

Since much of Florida does include areas where Cabbage Palms (*Sabal palmetto*) grow, most people are quite familiar with swamp cabbage, which actually is the terminal bud of this tree with the bitter outer layers peeled away and discarded. The cabbage may be eaten raw or cooked. It is most delicious as well as nourishing. Even the fruits of this native palm are edible. They have a taste somewhat like prunes and may be eaten raw, cooked, or dried.

Common in much of America is the mulberry tree, and the Red Mulberry (*Morus rubra*) is widespread in Florida. It grows to a large size. Ripe in the spring, the one- to two-inch long fruits resemble blackberries both in taste and appearance. These, too, may be eaten raw or cooked and are readily available as an edible wild fruit—delicious as a treat and handy as a survival food.

A ground-hugging plant so insignificant as to be usually ignored, but one that is prevalent all over the world, is Purslane (*Portulaca oleracea*). Plentiful in Florida, it is found on the mainland and on islands also. Purslane clings to the ground like a piece of lace. It has very succulent stems, green or reddish in color, from three to six inches long, which fan out. The flowers are tiny and not very noticeable. This plant may be eaten raw or cooked, too. It is delicious in salads or as cooked greens, with, perhaps, some salt pork added to it, if available.

In the unlikely event of a lack of drinking water while hunting, fishing, or camping in south Florida, water can be obtained from either of two non-native trees, both of which are commonly referred to as Australian pines, but neither of which is a true pine. The Australian Pine, or Horsetail Tree (*Casuarina equisetifolia*), is the one which has conelike fruit that looks like pine cones. The so-called "needles" are actually jointed miniature branches. Potable (drinkable) liquid may be obtained in an emergency by cutting and draining the sap from a branch of the Australian Pine.

The other "pine" tree, the Brazilian Oak (*Casuarina glauca*), is not oaklike at all but pinelike, since it is a member of the same genus as the Australian Pine. The "oak" has numerous suckers around its base, and they spread between trees to create very thick stands. In Australia the aborigines obtain water from them by cutting the roots.



Australian Pine

There are many other wild plants that bear edible parts, or whose fruits may be used in making delicious beverages. Those we've described are some of the more familiar to Floridians, however, and are likely to be the most useful to outdoorsmen as survival foods.

Hunting and fishing menus do not have to be "all meat and no potatoes," for even without an emergency stay in the wilderness, the potatoes, the salad, the greens, the asparagus, the fruit, and the dessert are all there close at hand—"just in case you want to augment the usual camp fare with some wild, natural, side dishes.

But the best part is that you don't have to plow, plant, water, weed, or fertilize. All you have to do is reap nature's harvest. Just remember when you gather and prepare prickly pear or stinging nettle to use as much care as when you catch and clean a catfish. And remember, too, that some plants are toxic, both externally and internally. Caution and sure identification are important in selecting wild plants for consumption, and just as with fish and game, certain parts of plants are edible and certain parts must be discarded.

Finally, just as any good hunter, fisherman, and conservationist always does, remember to take only that which you plan to use or eat. That way there will always be some left to reproduce and to give eating pleasure to the next sportsman—or to the next wild creature. ●



Photo By Tom Stubbs

Devil's Millhopper

an oasis of natural wonder and beauty threatened with becoming another deep, damp dump

SET LIKE AN EMERALD in a dry, sandy north Florida forest of turkey oak and pine is a large crater, its sloping sides supporting a luxuriant growth of ferns and hardwood trees, and down which trickle small, clear rivulets that cascade over rocks and form tiny waterfalls pouring into shallow pools. With a little imagination it could be a modest Japanese garden tucked away in the Florida flatwoods.

In reality, it is a natural sinkhole known as the Devil's Millhopper, located near Gainesville on land owned by the University of Florida. The Millhopper is one of the largest sinks in the state. It measures 500 feet in diameter at the rim, though considerably less at its base. A depth of 114 feet causes the unusual conditions which have created a micro-habitat in which ecosystems vary markedly from the surrounding area.

From a distance, the Millhopper can be detected by its dense growth of woody trees rising from the flat plain of oak and pine. A sink's vegetation seldom differs so sharply from that of the surrounding countryside. Usually, a sink in an

area of scrubby growth will support plant communities of the same kind, and likewise for hammocks and other situations. The Millhopper, however, is an "island" of extensive, well-watered growth set in an area that is fairly dry. It is an old sink. Probably, it has been there as much as a thousand years.

The age of a sink may be determined, to a general degree, by the angle of incline of its slopes. Newer ones tend to have steep sides, whereas older ones become worn down from erosion. The banks of the Devil's Millhopper incline at angles of 30 to 35 degrees—quite a mild grade.

About halfway down the incline there is a ledge some 25 or 30 feet wide, indicating there were probably two cave-ins. The lower portion represents the actual collapse of the caverns which created the sink, while the wider upper part is likely the result of erosion.

In general, sinkholes are the result of the action of water on the porous limestone substrate underlying northern Florida, which is characterized

by countryside riddled with shallow, interweaving networks of caves. When the ceiling of an underground cave has worn too thin from dissolution, it simply cannot support its own weight and collapses, perhaps very slowly. The result is a sink. Some are quite small, being only several feet deep and amounting to small depressions or pockets in the woods or fields. Others, like the Devil's Millhopper, are of impressive dimensions. More than once a sink has opened up under a road or highway, or beneath some luckless person's house or farmland, overnight, damaging buildings and agricultural machinery if not swallowing them altogether.

From the outer edge of the Millhopper to the rim of the inner ledge the banks are so heavily wooded that only a small amount of light filters to the forest floor, which is a veritable mosaic of rotting leaves, mosses, and ferns. On the incline from the ledge to the bottom, the stand is thinner, allowing the growth of more grasses and other small plants.

There are three plant associations in the Millhopper, each clearly delineated by its position therein.

The first of these is an association of plants that prefer the dry, sandy soil of the sink's periphery,

among which certain viburnums and composites are typical. (We call this association *semi-mesophytic*.)

The second is the hammock association of hardwood plants growing on the steeper banks in calcareous soil. These trees include oaks, hickories, bays, and maple. Many of them are quite slender—competitors for the minimal amount of growing space, living among a scattering of larger specimens that have been there for many years.

The third is a grass-sedge plant association which has developed on the alluvial soil (formed by flowing water) at the bottom of the sink.

The Millhopper's base fluctuates in character, being at times a swamp completely covered by water while on other occasions it becomes almost entirely dry. In the latter circumstance it may be meadowlike. The grasses spread out and thrive, and soon there is a green field cut through by a few random rivulets of water which gurgle a short distance and vanish underground.

The sink basin is not as low as the water table. There is no permanent standing water. The swampiness occurs during wet months of the year when runoff from above cannot seep into the soil before it reaches the bottom. There is drainage into the sink from minor underground water sources, however—the cause of the picturesque streams flowing down its sides.

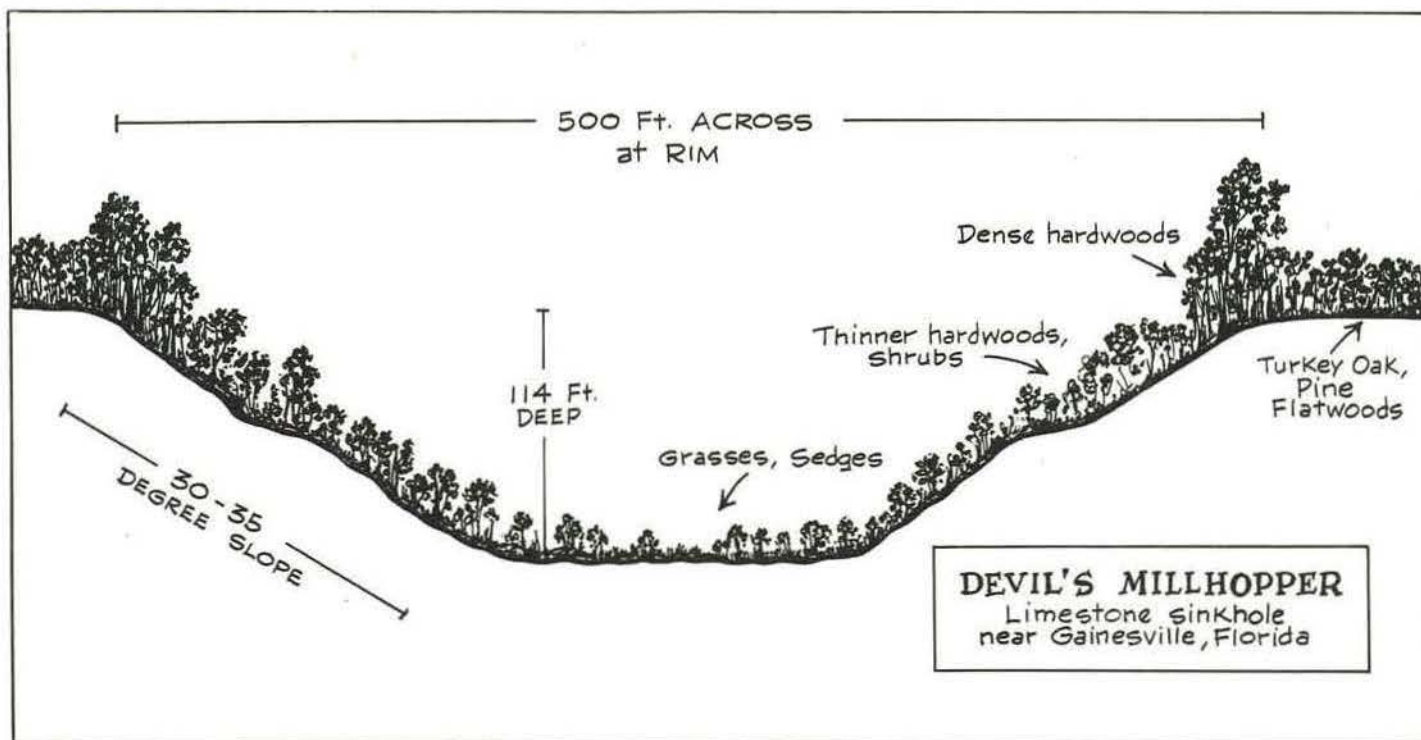
Because of the Millhopper's cool, damp depth and its isolated plant communities, the ecosystems within it are quite different from neighboring ones, and some aspects of the ecology are unique. A difference of just a degree or two in temperature can

(Continued on next page)

By TOM STUBBS

Approaching the edge of the Devil's Millhopper, left, the dominant feature of the landscape is a stand of tall hardwoods towering above the surrounding vegetation. Limestone sinks are common in north-central Florida, but this one is larger than most, and it is certainly unique ecologically.

Drawing By Wallace Hughes



(Continued from preceding page)

affect the nature of biotic communities. Such is the case here. There are some peculiar qualities about the living things in the Devil's Millhopper which are not instantly striking but which, considered from a thoughtful, analytical viewpoint, pose interesting questions. (Biological phenomena usually do not just occur. There is a reason for them, and even seemingly small peculiarities can present challenging but often unanswerable speculation regarding their origins.)

A good example is the population of Southern Dusky Salamanders (*Desmognathus fuscus auriculatus*) within the sink. In appearance they could be mistaken for their northern cousins, Common Dusky Salamanders (*D. f. fuscus*). The northern variety has a pale underside, lightly but distinctly mottled, while the southern one has a black underside with light stippling. The problem is—in the Devil's Millhopper the southern subspecies looks like the northern!

Why is this so, that one tiny segment of an animal's population resembles a distant counterpart with which it has no contact? Since nothing has been shown yet for certain one way or the other, it is possible only to propose plausible ideas. (Or perhaps implausible ones, depending on the point of view.)

Those salamanders in the Devil's Millhopper may represent a relic population of the Common Dusky Salamander left over from a time when that one's range extended farther south. Or perhaps the iso-



Photos By Tom Stubbs

lated breeding group of them in the sink is influenced by the same genes affecting the coloration of the Common Dusky, for no other reason than that there is no pressure against it, whereas for some reason the Southern Dusky has altered.

Those in the Millhopper surely have no contact with others of their species. Whatever the actual reason is, it is an obscure one, giving rise to conjecture on the nature of factors influencing animal populations.

Another inhabitant of the Millhopper is the Bronze Frog (*Rana clamitans*). This hammock-loving frog is frequently found in that sink, whereas in most places it is rare. Part of its scarcity may be attributed to its secretive habits. But its numbers in the sink seem above average, and this is very likely due to the cooler temperatures there, especially in light of the Millhopper's position at the southern limit, more or less, of the frog's range.

The mystery of the Millhopper grows darker the further one delves into its ecology. The examples of the Dusky Salamander and Bronze Frog populations are notable ones, really quite fascinating from a biologist's perspective. But even the interested layman should not find it difficult to appreciate the problems set forth by these nearly anomalous populations of animals which exist in an environment only five hundred feet in diameter, yet which seems to harbor qualities matching areas several hundred miles farther north.

The Millhopper's interest is not only in its living populations of animals but also in its extinct ones.

It is a popular site for fossil collecting among students, who find the various remains that are constantly being exposed by water movements. Most apt to be found are the teeth of various species of extinct sharks, manatee ribs, and horse teeth, mixed in among the occasional arrowheads and other Indian artifacts.

By the time one reaches the sink's floor, there is a mixture of fossils representing marine, brackish, and fresh water environments. The majority of the material is of Miocene age, from about 15 million years ago. The area was once submerged under a shallow sea and became dry land due to the up-lifting of the so-called Ocala Arch.

One theory holds that following the last Ice Age it was again submerged, while another maintains this did not happen and that the rises in sea level affected only areas closer to the coast. Whichever of those two theories is true, from the Miocene on it was mostly above water.

Of course, the Millhopper is only a thousand years old. The reason it figures so prominently in paleontological musings is that it has exposed a significant slice of Florida's fossil record, which may be found in the jumble of remains at the sink's bottom. Undisturbed fossils found on the slopes are prone to be of more value in reading Florida's prehistoric past.

The Devil's Millhopper is one of the more interesting and unique areas in the state. It is, as we've noted, an "oasis," a place set apart; a tiny world of its own separated by invisible barriers from the adjoining woodlands. As such, it is a feature worthy of attention from conservationists. Its small size should make it an easy focal point of the attention of those waging efforts to preserve the

state's natural resources. But it has been woefully neglected. The bottom of the sink resembles a garbage dump much of the time—the result of thoughtlessness on the part of some of its visitors. Beer cans, bottles, and papers are to be found scattered over the ground or piled into ugly heaps.

There is no reason for allowing so aesthetic and significant an area to be scarred by the myopic hordes of humanity, many of whom repeatedly have shown themselves rather uninterested in the condition of the natural world.

Motorcyclists buzz around the periphery of the sink while others presumably out just to enjoy the beauty of the place aimlessly toss away their trash, dig holes, and pull up plants, causing a disintegration of those qualities that attracted them in the first place.

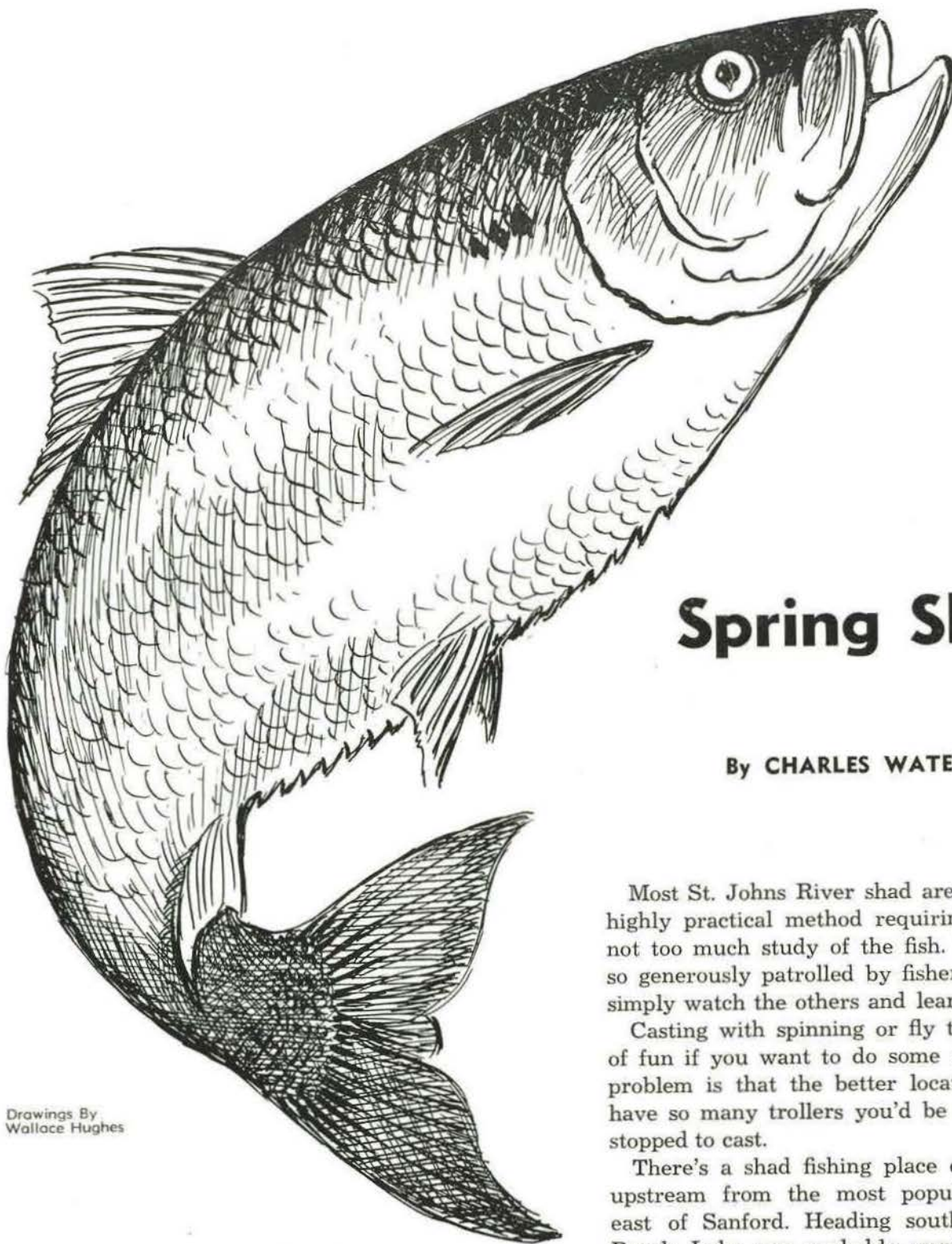
It is surprising, really, that the Millhopper has retained so much of its original character in the wake of such disregard and outright abuse.

The University of Florida makes some effort to keep the sink clean, but those efforts are merely a gesture in relation to what should be done. But, admittedly, there is no easy solution to the problem. It would take the efforts of a warden or caretaker to keep the Millhopper clean and free of depredations.

Perhaps funds could be appropriated to incorporate the sink into a patrolled park. If nothing is done to restrict its use there can be little hope of it retaining its tenuously balanced ecosystems, so vulnerable because of their limited scope. It would be regrettable to stand by as the Devil's Millhopper progresses toward becoming nothing more than a damp hole in the ground, a dump, devoid of its biological significance and beauty. ●

Musical cascades flow intermittently down the slopes of the Millhopper, upper left, lending air of a mountain stream. On the floor of the sink, over 100 feet deep, is debris from over the centuries. Scenes of plant growth, left, and fern-edged grotto at right, give a primeval feeling to area.





Drawings By
Wallace Hughes

Spring Shad

By CHARLES WATERMAN

THE SHAD IS SOMETIMES described as a fire-breathing tackle-eater and a gourmet's ecstasy. A somewhat different slant views him as a dopey, shingle-shaped package of bones. The truth, as usual, lies somewhere in between.

A 2-pound shad on heavy tackle will come aboard uneventfully. He's shaped to tow easily, and unless he can get underway, he won't kick up the fuss a bass of similar size might produce. Pick a bigger fish or lighter tackle and he'll show not only speed but staying power and some pretty classy jumps.

Most St. Johns River shad are caught trolling, a highly practical method requiring little labor and not too much study of the fish. The hot spots are so generously patrolled by fishermen that you can simply watch the others and learn what to do.

Casting with spinning or fly tackle can be a lot of fun if you want to do some extra work. Worst problem is that the better locations are likely to have so many trollers you'd be in the way if you stopped to cast.

There's a shad fishing place called Puzzle Lake upstream from the most popular shad hangouts east of Sanford. Heading south (upstream) into Puzzle Lake you probably won't know when you get there as it's just a poorly engineered series of sod-banked channels that becomes a solid sheet of water when we get enough rain.

You can run an outboard boat fairly well if the water's low enough to reveal the channels, but if the banks are barely covered, supernatural powers are helpful and an ordinary rabbit's foot won't prevent violent groundings. Then, if water gets extremely low, you're likely to dig mud, even in some of the channels. Puzzle Lake can best be described as carelessly oriented.

The shad and bass seem able to find the channels all right. On falling water, the shad sometimes school up with black bass and strike small bait

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fish, especially where bays and creeks drain into what passes for the main river.

As elsewhere, the shad seem partial to bends in the current. One winter I made a couple of trips up there, specifically for shad. We figured on fishing from the banks and at one of the first stops we temporarily forgot shad as some violent bass striking broke out just as we pulled the boat ashore, but by the time we got into action it was all over and the bass refused to come up again.

I thought shad were rolling all over the place but most of the surface disturbance turned out to be gar, some of which were about as large as I've seen in the St. Johns.

We didn't exactly load the boat with shad on those trips, although we had enough action to keep us contented. A small jig worked best on the spinning rods. It happened though, that the tiny Cather spoon cast on a fly rod with a sinking line caught the most fish on that particular occasion.

Cast on monofilament, the spinning rod jigs would come through the gentle current pretty straight but the current's drag on the fly line would pull the fly or spoon downstream and it would retrieve in a wide curve. For some reason, that seemed to be the most attractive method on the trips we made.

The technique is familiar to any northern trout fisherman who has fished a wet fly or streamer across and down stream. I found that a medium retrieve caught fish but a very slow movement of the lure did just as well with the current helping out.

Most shad battles begin slowly. In fact, I had

some of those fish almost to the bank before they decided there was anything worth getting excited about. Then they made some pretty long runs and most of the fish were good for two or three jumps at least.

Now about fighting qualities:

Shad have been called the "poor man's salmon" and the "fresh water tarpon." They just don't jump that wildly although they'll clear the water considerably. They don't do much shaking in the air and, unless brought up short by the tackle, they usually go back in head first instead of falling back with the rousing splash stirred up by a healthy bass. But a shad will generally outlast a bass and the big ones are likely to evade the net for a long run or two after the nervous angler figures it's all over. For that reason, netting operations on the better known shad grounds are likely to be comical, a frustrated angler sometimes giving way to a swatting technique, colorful language, and tackle destruction.

My method of fly fishing for St. Johns River shad probably wouldn't interest anyone not especially addicted to the fly rod but I'll go into brief detail. My best results were with sinking line (the kind manufactured to go down rapidly) and monofilament shooting line. The fly casting nuts call that rig a "shooting head" since there is only a short section of heavy fly line and it is backed up by a length of monofilament (generally about 20-pound test so it won't tangle). You simply false cast the short "head" and release it when it seems to be going good. Since the mono line weighs little and has slight wind resistance you can thus get a lot of distance with little effort. The disadvantages are that you must keep the mono from tangling and you must occasionally work the splice through your guides.

Now there are shad to be caught with regular floating lines and a fly that works only a foot or so beneath the surface but I believe you have to go rather deep to be consistent day in and day out. Most of the trollers and spin fishermen are getting pretty well down toward the bottom.

Claude Wright, who fishes regularly in the Puzzle Lake area, tells of finding shad striking on the surface along with bass. Claude was using a plastic bubble with a spinning rod and his lure was the "marm," an elongated bug with short hair tail. I have never run into that situation but it should have been a real picnic. I believe true surface activity is a bit unusual and I certainly wouldn't start out to catch shad that way.

In some other areas, the shad are habitually caught near the surface. Shad, you know, are fished over much of the eastern coast of the United States as well as the Pacific shore, where they were introduced about 100 years ago.

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Most trolling rigs employ two lures, generally a jig and some kind of small spoon. Spin casters rig that way also, but two lures are sloppy to cast with.

With a deep-running jig bouncing the bottom and a spoon working somewhat higher up, you have a good chance of locating the proper depth quickly. Experienced shad trollers such as the late Joe Cather, originator of the effective Cather spoon, generally adjust their trolling depth by simply extending or reeling in their line rather than using more weight. Slowing the boat's motion, of course, puts the lures deeper and the ideal level varies from day to day.

The shad is an anadromous fish, meaning he spends part of his life in salt water and then comes into fresh water streams to spawn, so part of the St. Johns fishing is for fish which are holding in a given area preparatory to the actual spawning. Some of the best fishing is for moving fish when you can get into a heavy concentration and that probably accounts for the fact you sometimes make good catches in a spot that seems to be abandoned from then on.

Such established shad centers as Lemon Bluff near Sanford are true spawning grounds. From time to time I hear of newly discovered shad spots, some of which are good year after year. Others are a one-shot proposition but the Sanford area has no corner on the shad, many of which are caught far upstream near Cocoa.

A small outboard is ideal for this as fish don't seem to be overly disturbed by the slow-motion boatcade that passes over them day in and day out. Any kind of powered boat that will run slowly is satisfactory for shad fishing. A good, big landing net is a big help as even a tired shad is a little hard to steer neatly. His mouth is papery in some places and too much pressure is risky.

Although inboard boats having above-water exhausts have repeatedly proved their superiority in trolling for some species, they have no noticeable edge on shad. I don't think they're sensitive to noise when holding in spawning areas.

Some of the best stories of what I'll call "traveling shad" have been told of the Lake George area. Just south of the lake as you move upstream into the river there are some very good areas for panfish and bass. Most common rig for crappie is a cane pole with small minnow and bobber and when a big school of healthy shad comes through a concentration of "speck" fishermen, there's some pretty wild activity. The shad may not be the toughest fish in the water but he'll run when hooked and a monofilament capable of swinging a crappie into a boat may not be capable of holding a shad. Some of the break-off's, of course, are attributed to monster bass and there's no sure way of telling unless you see the fish.

Just how much feeding a shad does as he nears the end of his spawning run is debatable and we get into that business of why a fish strikes, but most students of the subject feel that, although food is not the primary objective of such fish, they are not above taking on a little chow now and then. Although strikes at spoons and jigs may well be termed "anger strikes," the minnows offered by the speck fishermen can hardly be classified as anything but food and quite a few shad have been caught on plastic worms and eels.

The question of whether migrating spawners feed or not is an old one among Atlantic salmon fishermen in the North and the salmon's return to fresh water resembles that of the shad in many ways, although it's more dramatic in swifter streams preferred by salmon.

A fresh-run Atlantic salmon seldom has much of anything in its stomach after it gets upstream a bit. Still, these fish are sometimes caught on dry flies which can hardly represent anything but insects.

Trolling methods of Florida shad fishermen have become pretty well standardized, the principal lures being jigs, or "darts," and small spoons. Spinners are just as effective as spoons but give more trouble in line twisting.

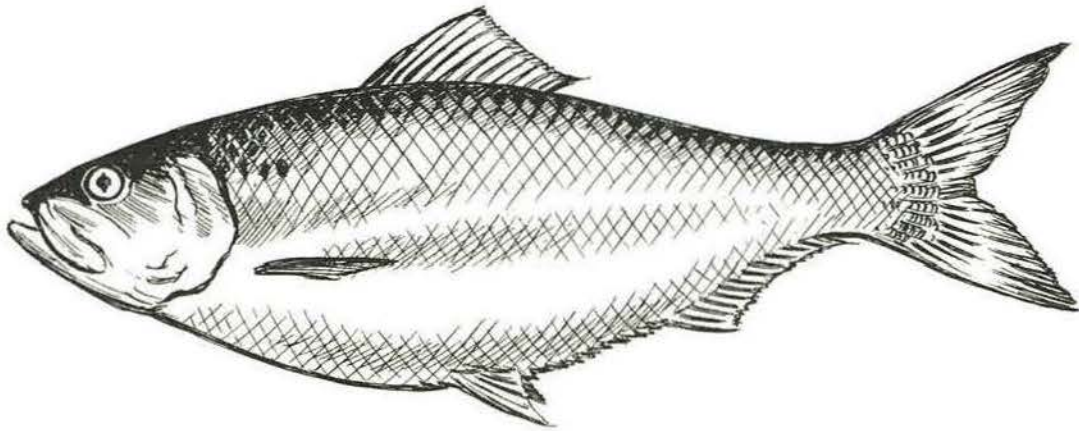
Although their designs may give them some action, the jigs certainly don't wiggle like plugs or spoons. Yellow, white and red seem to be the most popular colors for jigs, although some fishermen like green. Both nickel and brass spoons are used, real aficionados having definite preference for certain colors in certain waters. The theory of nickel for bright days and brass for dull weather has some basis and there are certainly times when one or the other is preferred.

Tackle stores near shad areas sell shad rigs already made up and ready for attachment to your line.

All right. The typical shad trolling combination is a spinning outfit with a medium action rod and eight or 10-pound test line. Ahead of this rig the fisherman generally uses a keel-type sinker weighing an eighth or quarter of an ounce, dependent upon his other tackle and the depth he wants to fish. At the end of his line there's usually a jig or "dart" and some 18 inches ahead of it he'll have some sort of small spoon fastened by a dropper so that it will get free action, running ahead of and above the jig.

That's pretty standard operating procedure but some fishermen use two jigs or only one lure. The merits of the standardized combination are that it gives you considerable spread in depth and presents the shad with a choice of target. On some days one lure gets the fish and on other days there's a definite preference for the other.

If the deep-going jig gets all the action, cagey



operators will endeavor to put the entire outfit deeper. The valued roe shad are believed to hang deeper in the water and some catches prove it, although it's not always so.

Spawning shad show no preference for cluttered waters, that is, they're not hanging out in weeds or brush by choice. Ideal shad areas are generally with sandy bottoms and numerous bars, sometimes under a brisk current, but there's no truly fast water in the St. Johns. Occasional obstructions break off a lot of fishermen and a well-oriented skin diver could pick up a bucketful of shad rigs after a busy day on one of the better areas. Several years ago, a sunken branch near Lemon Bluff collected a week's wages in lures.

Now I said the typical trolling outfit includes a spinning rod and reel. I wouldn't say that's the ideal setup. If I had an outfit for use only on shad trolling, I think a medium spinning rod with a single action fly reel and monofilament line would be close to perfect. That's what the late Norton Webster used. He is usually credited with starting sport fishing for shad in the St. Johns back in the forties.

The late Joe Cather, inventor of the Cather spoon, used a plain, ordinary fly rod and fly reel but employed monofilament line. A long, light-action rod with a baitcasting reel would work fine. Most of the big salt water outfits seen on the shad grounds are unnecessarily bulky and the rods are generally pretty stiff for shad. If carried in a rod holder, an outfit should be flexible and the drag should start off smoothly.

Monofilament line is justly preferred because its small diameter allows it to sink swiftly to trolling depth without excessive weights. About 75 feet of trolling line is generally right. On a busy day, it's easy to get tangled up with other fishermen if you use more. On a popular trolling spot, ultralight tackle will get you into trouble and might even bring forth dramatic rhetoric from other anglers. A big shad will go quite a piece if you can't give him some pressure and he could easily collect several other lines in the process.

Usually a bunch of shad boats fall into a trolling pattern—down one side of the river and up the

other and a bit of conformity will make friends and probably catch just as many fish. I confess I never spend a lot of time trolling. But I found it was a temptation to immediately swing around and cover a hot spot again in the other direction after getting a strike or two. Since there's sometimes a parade of trollers immediately behind you, that's bad form. You'll just have to go on a piece and turn back with the pattern.

Most St. Johns shad don't make it back to salt water after spawning, the biologists tell us. Commercial netting at the mouth of the river provides fish for northern markets at a time when shad aren't present in northern rivers. The run is in the spring there.

The word "shad" is used pretty loosely. Our larger ones are white shad but we have hickory shad too, (similar in appearance) and the small "herring shad" are sometimes called menhaden. Gizzard shad, or "stink shad," are a different fish from those sought in the river.

A 5-pound Florida shad is about tops although there are some which will go a few ounces more.

The season is long. Although the first shad are found in the St. Johns in November, tackle dealers tell me that nothing much moves in the shad department until Christmas. From then on to the middle of April shad fishing is likely to be pretty good. Perhaps February would be the top month most of the time, although the "runs" are ill-defined and, of course, fishing is sometimes poor when you know the fish are present.

Actual spawning operations are carried on mainly during the night and evening hours, observers say. Sometimes the fish are wallowing all over the river at night and you simply can't catch one.

It appears lately that there is more interest in shad as a food fish in Florida. It's now illegal to chuck a dead one into the river after removing the roe.

Shad can be staked and cooked until the bones are harmless. Strips of boneless meat can be cut from along the spine. Some experts can bone them out but I don't know how and can't find anybody who will tell me. ●



Male

Photos By Wallace Hughes

THERE ARE OVER 30 species of sparrows, *Fringillidae*, in Florida, but the common House Sparrow isn't one of them. He is a member of the weaver finch family, *Ploceidae*, a sparrowlike group from the Old World.

The House Sparrow, *Passer domesticus*, was introduced into this country by British immigrants who were accustomed to the hardy little birds. They felt the sparrows would give a touch of "home" and mistakenly thought they would help control insect plagues.

Eight pairs of House Sparrows were released in Brooklyn Park, New York in 1850, but they all died the first winter. Later, 50 more birds were brought into New York and other eastern cities. The population expanded rapidly, especially along railroad lines which carried grain shipments, and only 30 years later, the birds were so numerous they were considered pests.

In 1883, Pennsylvania passed a law stating it was lawful at any season of the year to kill or in any way destroy the "English Sparrow," as it was originally called. By 1889, seven states had similar laws and two offered bounties of 10¢ per dozen for their destruction. (The House Sparrow is still an unprotected species in Florida and all other states.)

Despite the war waged against them—especially by farmers, who disliked their grain-eating habits—the House Sparrows successfully invaded the New World. They are now found from coast to coast, although in less abundance than during the heyday of the horse, in whose droppings they found many a meal of undigested oats.

The birds are about six inches long, with a stout bill and a short, slightly notched tail. The male has a gray cap and a black throat, with white cheek patches and wing bars. He is reddish-brown and

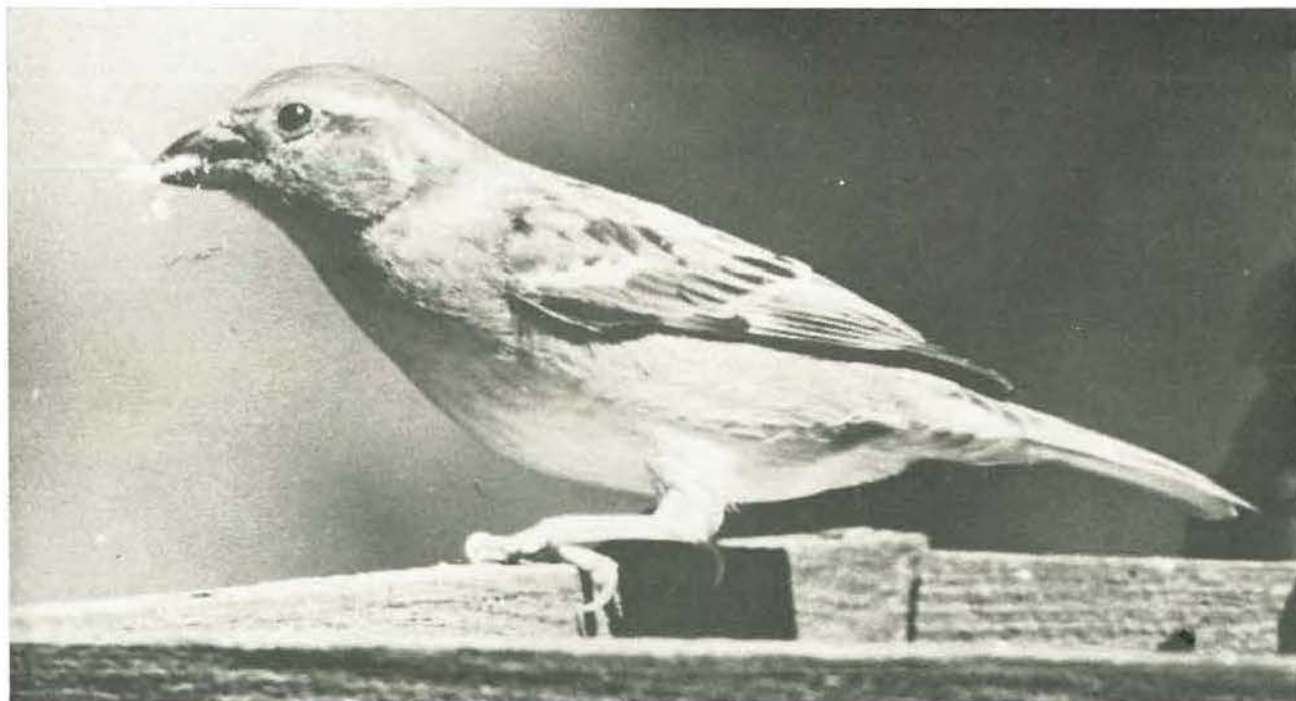
House Sparrow

gray on his upper parts and grayish white below. The female is streaked, buffy, gray and brown above and pale brownish-gray below, with a buffy line over her eye. Albinos of all degrees are not uncommon and are the basis for many reports of unidentifiable birds.

House Sparrows are closely associated with man, nesting on buildings or sometimes in nearby trees if there are no suitable places on a house. The male looks for the nest site, checking roof holes and under eaves to assure nest protection. As spring approaches, the males occupy the sites, defend them against other cocks, and start calling for a mate. Once mated, they occupy the nest and remain faithful to each other and their home for life.

The nest has an outer layer of dead grass or straw with a lining of feathers or a great variety of materials including cotton, plastic, excelsior, cloth, string and grass. Fires have reportedly been started when a bird has added a lighted cigarette to its nest. Cocks do most of the nest building and they strongly defend the immediate surrounding territory. Usually, a threatening posture is sufficient to deter invaders, although a severe fight may develop. The male will protect the nest against other males, while the female takes care of any inquisitive females.

A pair of birds will produce two or three clutches a year for about five years, averaging five eggs per clutch. The eggs are grayish white and marked with brown and gray and are laid early in the morning at the rate of one a day. Most of these eggs hatch early in the morning, and the young birds are



Female

By NANCY CHOIKE

fledged about 14 days after hatching. Mortality in the nest is high. Only about four or five fledged young are produced each year. Usually, successive broods are raised in the same nest, but sometimes the parents will use a second nest within several yards of the first one.

The cock shares the domestic duties, incubating eggs and feeding young almost as much as the hen. Fledged birds return to the nest for about two weeks and are fed by the male while the female gets another brood ready.

Such parental care is not uncommon. Adults have, under certain circumstances, continued providing food for great lengths of time.

It was reported that a pair of adults kept returning to a nest for a year after the young should have flown away. On closer investigation, it was discovered that one of the youngsters from the previous year's brood was entangled in a piece of string used to line the nest. Since the parents were unable to release him, they continued to feed him on a regular basis.

The sparrows enjoy extensive water bathing, dust bathing, and preening—perhaps associated with the fact that their use of the nest for breeding and roosting may expose them to excessive risk of infestation by nest-living parasites such as mites. Bathing is usually a communal activity, and the birds taking part are less likely to be surprised by predators like owls, sparrow hawks, cats, or man.

The House Sparrow has a short working day compared with other species. He will return to the roost before sunset and leave the nest around sunrise.

Nestlings are fed mostly insects, while adults feed mainly on grain and vegetable matter. Before feeding the young, the adults kill the insects by striking them on hard surfaces—or they may remove dead insects trapped in a radiator grille on a parked car.

There is no seasonal migration. Adults usually remain at the original breeding site, while the young birds move only a mile or so away to look for their nest sites.

What about the House Sparrow's future? There's no doubt it is a most successful animal because it adapted to an ecological niche in this country that had not been exploited by any other bird. Thus, it had little trouble "taking over." They are also quick to accept new sources of food, like insects attracted to street lights, and feeders kept by bird fanciers.

Another reason for their success is their high order of native intelligence and learning ability. For example, two House Sparrows were nesting in a ventilator in an office building wall. Both the inside and outside ventilator grilles had rusted, leaving holes which had attracted the sparrows. The nest completely filled the space between the grilles, and the adults entered the nest from the outside to feed the youngsters. The building's owner objected to the noise at feeding time and blocked up the outside entrance to the nest. The parent birds flew in an open window, made a new entrance into the nest through the inside grille, and continued to feed their young. This intelligence, along with its adaptability and association with man, almost certainly accounts to a great degree for the sparrow's abundance.

If man insists on clearing out the woodlands to create coast-to-coast housing developments, the harsh utterings of the House Sparrow may well be the only bird's song he will hear. ●



Florida State Park Photos

THE WAY-OUT YOUTH of today can't hold a candle to a man who swept across the pages of Florida history over a hundred years ago, flaunting the conventions of that staid era with a life style that shocked the establishment yet brought him personal respect and vast wealth.

Zephaniah Kingsley lived from 1765 to 1843. He was the epitome of nonconformism—slave smuggler and trader, master of a black harem, collector of human scalps, outspoken atheist, and wearer of clothes that would have brought smiles even to followers of current “anything goes” fashions. He remains one of the most colorful characters in this state's long and vivid history.

Although born of noble parentage in Scotland and reared as one of the gentry in Charleston, S. C., Kingsley chose the life of an adventurer, traveling extensively while engaging in commercial operations in the British Isles, Africa, the West Indies, and in North and South America.

Actually, the details of his life are sketchy until, at the age of 38, he came to Florida. That was in 1804, and Florida was still in the possession of Spain. Drawn by the offer of a Spanish land grant, Kingsley was also eager for the opportunity to engage in slave trading.

Almost miraculously, the two-story frame house Kingsley built in 1817 still stands—on Fort George Island, 20 miles northeast of Jacksonville. It is considered the oldest plantation house in Florida.

An even older, tabby-brick house also is there. It

Kingsley House

restored home of one of Florida's
most colorful pioneers

was built in 1792 by Captain John “Don Juan” McQueen when he was granted Fort George Island for services to the King of Spain. Both houses, joined by a Kingsley-built trellised walkway, are now part of the historic site called Kingsley Plantation, restored by the Division of Recreation and Parks, Florida Department of Natural Resources, and included in the state park system.

Zephaniah Kingsley was already well-versed in slave trading when he showed up in the Territory of Florida to claim his grant of 3,300 acres on the St. Johns River below present-day Jacksonville. He brought in his own slaves in his own ships and laid out Laurel Grove, the first of his several Florida plantations. It was located where the City of Orange Park now stands.

From these properties Kingsley reaped a varied

harvest. He brought in "uncivilized" Africans and put them to work in his fields to grow profitable crops and in his household to train them vocationally in the various plantation skills from blacksmithing to cooking. He then sold them throughout the South—at premium prices. The badge "Kingsley Slave" automatically brought top money at the block—up to \$1,500.

Kingsley supervised many of the slave expeditions to Africa himself, personally dealing with the strong chiefs who could furnish him black men and women suitable for resale in the New World.

It was on one of these trips, in Senegal, in West Africa, that he met and courted Princess Anna Madaigene Jai, the tall, intelligent daughter of an important chief. She later became part of the menage he brought to Florida—but she came as his wife, not as a slave!

In his will he wrote of Anna, "... our marriage was celebrated and solemnized by her native African custom although never celebrated accord-

ing to the forms of Christian usage." She apparently was the only black woman to whom he considered himself married, although several other liaisons, and offspring produced therefrom, also were acknowledged in his will.

Kingsley described Anna as a woman of "truth, honor, integrity, moral conduct, and good sense." Of her ability and diplomacy there was no doubt, for she managed the operation of his plantation holdings and many of his business affairs during his frequent absences. Recognizing her as a royal person, the slaves all called her "Ma'am Anna" and remained properly servile.

At that time, slavery was practiced throughout the world and Kingsley believed some men were better off under bondage than free. He wrote treatises on slavery, advocating humane treatment and proposing that slaves could be trained for skills that would give them a better life than they would have known in their native land. But he was, after all, a slave trader, and he improved his fortune while attempting to prove his point.

The wholesome climate and fertile soil of Florida offered a locale particularly suited to the carefully considered methods by which he carried on his business.

Spain was offering attractive land to colonists with slaves and money. But, most important to Kingsley, the U.S. Congress prohibited the importation of slaves in 1807—making Spanish Florida the perfect base to bring in the "lifeblood" of southern plantations, however illegal the traffic.

Kingsley hoped Florida would remain a Spanish colony forever. Slaves could easily be smuggled across an unsettled and unguarded border.

His headquarters was the plantation at Laurel Grove, but he also maintained a home in St. Augustine, Spanish capital of East Florida. Fortunately, Kingsley was in St. Augustine when the Seminoles attacked Laurel Grove during the war of 1812, setting fire to the houses, scalping white employees, and carrying away a number of slaves.

The enterprising Kingsley sued the U.S. Government, which he blamed for the attack, and eventually collected \$73,000 in damages. But he wanted no further setbacks to his business, so he formed a friendship with the Indians that kept his plantations free of attack even during the bitter Seminole War of the 1830's.

His ever-present luck brought him an even better base for his slave trading operation, however, shortly after the Laurel Grove disaster. He moved to Fort George Island in 1813 and four years later acquired the old McQueen House, then occupied by John McIntosh, a wealthy sugar and rice planter from south Georgia. (McIntosh misguidedly had helped organize the East Florida Republic, participating in the so-called "Patriot's War"

(Continued on next page)

By VIRGINIA NEWMAN

Kingsley Plantation, near Jacksonville, was the setting for some nonconformist life styles back in the early 1800s. The houses, left, were built for man and wife—separately. She had palms, below, planted along drive leading to the houses.



(Continued from preceding page)

against Spain and serving as the Republic's first president—until the Spanish forced him out of Florida. His house had been the patriots' "White House.")

Kingsley installed Anna Jai in the McQueen House (it being against Spanish law for white and black to live together under the same roof), and built a country manor that was architecturally of the Virginia Tidewater plantation type. The "Anna Jai House," as it was called thereafter, was linked to Kingsley House by the covered walk.

The manor house was built with a basement, two stories, and an attic. Pavilions jutted out from each corner, and exterior porches and stairways completed the north and south facades.

A "widow's walk" topped the structure. From that vantage point Kingsley could watch for his ships and see them enter the Fort George Inlet from the Atlantic and follow the winding tidal channel of Fort George River to a dock near his house.

The wide channel is another proof of Kingsley's cunning manner of turning every event to his own advantage.

Once, the U.S. Coast Guard captured a ship-load of 350 slaves he was smuggling into Fort George. After they had successfully captured the vessel and its living cargo, the sailors conceded they had no means of holding or disposing of their

charges. If put ashore to fend for themselves the savages would have died. Many were already sick.

Knowing that Kingsley was the only accessible party capable of caring for the Africans, the Coast Guard officers turned them over to him, extracting a promise, however, that he would put them to work deepening and widening the channel of Fort George Inlet, a deal that enabled Kingsley to bring his slave ships in with far less navigational problems thereafter.

Just as he watched his ships from the elevation of the widow's walk, he oversaw his slave operations from the vantage point of a big white horse. Cursed with the lack of height afforded most men, the tiny Kingsley affected a tall Mexican sombrero and bright green poncho as he rode about his plantation. Large square silver buckles on his shoes were another trademark.

Despite his eccentric attire and unorthodox way of life, Kingsley was highly respected. When Florida became a U.S. Territory, he became a political leader and, in 1822, was appointed by President James Monroe to one of the 13 seats on the Legislative Council that governed the Territory.

While Kingsley considered his treatment of slaves as humane and beneficial, punishment was meted out to those who failed to follow the plantation rules. Generally, it was left to Anna to pass judgment—the number of lashes for disobedience, lagging in the fields, or whatever the offense.

Once, Kingsley returned from a business trip to find a woman housekeeper with her ear nailed to the door—punishment for disobedience. She was patiently waiting for Anna to come and authorize her release.

In the middle of the basement, or cellar, a large room was reserved for slaves who were really bad. Folklore has it that those unfortunates who were placed in leg irons here ceased to cause trouble for anyone.

Two other rooms, built of heavy cypress, just below the widow's walk, were used to keep unruly slaves under lock and key for short periods.

These detention chambers were carefully hidden from the sight or sound of the spacious living quarters, but Kingsley decorated one wall of his house with a brazen show of his manner of dealing with his enemies. On this wall hung the scalps of those who had crossed him!

Despite his iron-handed rule, his slaves respected him and the life he provided for them. During an attack by renegade Indians, when many slaves had the opportunity to run away, none chose to do so.

His concern for the blacks was sincere, as is evidenced by the fact that in his will he stated, "... I do solemnly enjoin my colored and natural

Wide, shady yards and pleasant sea breeze make a visit to Kingsley Plantation most enjoyable. Nearby bird and plant sanctuary, founded by Rollins family, adds to island charm.





Florida State Park Photos

Pembroke table and landscape painting in the parlor of the plantation's house came from Scotland where Zephaniah was born. The house is open to visitors daily for a small fee.

children, that seeing the . . . inequitable laws of this territory will not afford to them and to their children that protection and justice which is due in civilized society to every human being, always to keep by them a will, ready made and legally executed, directing the disposal of their property after their death until they can remove themselves and properties to some land of liberty and equal rights, where the conditions of society are governed by some law less absurd than that of color."

He also directed his own executor not to separate the families of slaves and to allow any among them the privilege of purchasing his freedom at one-half his value.

Kingsley had sent Anna and their children to Haiti in 1835, and after filing his will in 1843, he set off for a visit with them. He died suddenly while enroute—in New York at the age of 78—and was buried in a Quaker cemetery despite his stated wish to be buried ". . . in the nearest, most convenient place without any religious ceremony whatever."

He provided for some of his nephews, offspring of his distinguished brothers and sisters, but most of his property and money was left to Anna and his children.

It was to prevent his natural heirs from receiving their legacy that eight relatives sued to break Kingsley's will. Among them was Anna Matilda McNeill Whistler, the lady who has become the personification of motherhood as a result of the famous painting by her son, James Abbott McNeill Whistler. She was Zephaniah Kingsley's niece.

Some years later the courts finally held the will valid, and the part of the estate that had not been depleted by attorneys' fees was divided among the natural heirs. Whistler's mother got nothing.

Kingsley House remained in the family. One of Zephaniah's sisters, Isabella, had married George Gibbs and moved to Fort George Island in 1821 to live with her brother. Their son, Kingsley Beatty Gibbs, grew up there and operated the plantation after his uncle's death.

In 1868, John F. Rollins of Dover, New Hampshire, purchased the island, and for 55 years the Rollins family owned the plantation house—longer than any other owner. In 1923 they sold it to the Fort George Club, which sold it to the State of Florida in 1955.

This area may be reached from Jacksonville by traveling via Hecksher Drive (State Road 105) or crossing by ferry at Mayport to U.S. A1A, then turning north at the village of Fort George. A winding road through mostly dense forest, laid out as it was in Kingsley's day, leads to the manor house, which faces Fort George Inlet, part of the Intracoastal Waterway.

Kingsley Plantation is open to the public from 10 a.m. to 12 noon and from 2 p.m. to 4 p.m. Monday through Friday, and from 10 a.m. to 5 p.m. Saturdays, Sundays, and holidays. A fee of \$1.00 per person is charged, except that children under 12, accompanied by adults, may enter without charge.

Few other places in Florida are as rich in both cultural and natural history as Fort George Island and environs. This scenic area at the northeast tip of the state boasts a lovely 150-acre wildlife sanctuary where nearly 100 species of migratory and native birds have been cataloged; a long, winding Indian shell mound; a Civil War fort occupied, respectively, by both Confederate and Union soldiers; the site of an earlier fort built by Gen. James Oglethorpe, founder of Georgia; and a memorial to the Huguenots, who conducted the first Protestant religious service in America there—in 1562, some 60 years before Plymouth and 40 years before Jamestown—under the leadership of the French explorer Jean Ribault.

A visit to Kingsley plantation and Fort George Island should appeal to history buffs, birders, and botanists, particularly, for the John F. Rollins Bird and Plant Sanctuary has, in addition to its birds and other wildlife, unusual native orchids, ferns, and many varieties of trees and shrubs not commonly found elsewhere. ●



Photo By Kit Hunn

MY PLUG LANDED NEATLY between the thick lily pads on the edge of Little Lake Harris. I twitched it once, twice, and then a small bronze-back vaulted from his cover, sailed across the pads belly up, and landed with a vigorous splash well beyond my line. He'd missed by a good two feet, sailing past the lure ahead of it, not behind it, with his "slide, Kelly, slide" antics.

I looked at Ty Parker, our host from Mt. Dora. He just shook his head.

"It can't be. Those bass are cross-eyed, just plain cross-eyed, or they'd be swallowing our plugs," he moaned.

This wasn't an isolated experience. Instead, it had been our standard that bright morning. Plenty of bass rolls but far too few connections. The bass were charging our plugs with reckless abandon, but they needed special appointments with the eye doctors—or they needed to have their sonar or radar checked by the experts. They couldn't hit the broad side of a Boston Whaler, let alone chomp on our floaters. And we were getting ulcers.

On this particularly beautiful day in central Florida, the bass were following Ty's predictions to a degree. He'd promised action as soon as the sun was up, enabling the bigmouths to glimpse the silvery Jim Pheiffer double-propeller floater lures we were flipping with our spinning gear 'midst the abundant lilies. Ty'd practically guaranteed they'd hit only Pheiffer lures. I didn't believe

Cross-eyed Bass

By MAX HUNN

him until I tossed everything else in my tackle box fruitlessly and then borrowed one of his Pheiffers. But he had not promised cross-eyed bass.

Normally, you expect the bass action to start shortly after sunrise. However, ours hadn't. Instead, we were only practice-casting until the sun was about nine o'clock high and had broken through the heavy cloud cover normally preferred for angling for bass. Action started finally, but what freak action!

My experience was minor, however, compared to the gigantic frustration we suffered later. After boating a couple of small largemouths who did have their sights adjusted, and having a number of violent misses, we reached the ultimate in frustration.

Kit had a vicious roll with a cast to the left of the boat, then another, and yet another, on the same retrieve! Whether it was the same bass or three cross-eyed bass, we couldn't determine. But there was no contact. She made four more casts and got four more misses. Undoubtedly, she was angering some bass, but how they needed to see their optometrist!

Heightening the frustration in the same cove—there wasn't more than 20 feet of open water interspersed with lilies—was Ty's almost simultaneous experience. Plugging to the right, he stirred another eager bigmouth into three short-range strikes on three successive casts.

Eleven misses in one hole. How cock-eyed could this fishing get?

It was the king of oddball mornings. We couldn't move our boat without seeing big rolls under nearby lily pads, heralding the departure of numerous bronzebacks. Frequently, we'd hear one of them chomp on a meal with all the quiet of a runaway bulldozer. They were feeding back in the shallows 'midst the high grass where we couldn't reach them.

As if to tantalize us more, we'd pole along and see huge circles beneath the pads over which our boat had passed, as the bass quit playing 'possum and departed.

There was no fishing jinx on any of us, nor could we attribute the strange results we were getting to different lure manipulations. These confounded bass were impartial as to whose plug they short-ranged. They were just cross-eyed. They just didn't connect.

But of all the wacky encounters in that hole,

mine with the "slider" was the craziest. If he was so anxious, why was he so off-range? We looked at each other and shook our heads.

"That shouldn't happen. It can't," muttered Ty again and again as I disgustedly finished my now-fruitless retrieve.

"Yeah, that's what the book says," I replied, uncertain whether to laugh or swear. "It shouldn't happen, but it did. I've never seen a bass miss like that. Have you?"

Ty hadn't.

"Are these bass bedding?" I asked a few minutes later, trying to analyze our crazy encounters. Bass when spawning often attack plugs not from hunger but to drive the intruding object away from their nests. Usually, they don't connect.

"Shouldn't be," replied Ty. "Too early. Water's still too cold. Haven't seen any signs of bedding yet. In two or three weeks, yes, but not now. I'm almost certain these aren't bedding bass."

Continuing to ease along the shoreline, we continued the missing game—not completely skunked but badly frustrated. Infrequently, we'd encounter a bass with his glasses in focus, and we'd put him in the boat. When they did connect, they meant business. Our only complaint was that the on-target ones were too few.

Ty, as any true angling host would, kept bemoaning the antics of the bass in his favorite fishing hole.

"We've had enough strikes and rolls to have boated three limits (30 in Florida) long ago," he remarked after another hour of ulcer fishing.

But despite the bass with eye problems, we gradually began to acquire a reasonable string. Ty boated one weighing more than two pounds and felt better, but it didn't solve his ulcer problem. It just deadened the pain.

Finally, I got a little relief by landing one as large as Ty's. The way things were going, it was fortunate mine hit in an open space between the lilies where my 10-pound-test spinning line was sufficient. But in between these respectable catches the largemouths worked on our nerves with wood rasps. They rolled viciously, missed with glee, and batted our plugs out of the water—but they didn't connect often.

Slowly, we acquired nine keepers. The sun was approaching high noon. The still-active bass should have ceased their antics long before this, but then they were unorthodox as well as cross-eyed. Anyway, having a meeting scheduled in the afternoon, we had to quit.

Just before reaching the fishing camp where we'd picked up our skiff, Ty eased into one last cove for a brief fling.

"We can't go in without one limit. We're only one shy. Let's nail him. Bottom of the ninth coming up," he said.

We were agreeable.

Ty flipped his plug over the stern, snapped his rod tip up almost instantly, and then sorrowfully watched another cross-eyed bass perform! One out in the ninth.

Kit placed her cast to the left of the bow, retrieved a few feet, and squealed as the water boiled. This one missed too—by a good half a foot. Two away.

It was my turn to be Casey at the bat. There was no joy in our boat after my cast close to the grass. The plug barely landed when the water erupted in a tremendous boil that could only have been kicked up by a bass in the 8-to-10-pound range.

"Oh, no!" exclaimed Ty. "You had to encounter a cross-eyed grandpa!" Out three.

He picked up the oars to get us out into the open water for the run to the dock.

We had boated nine keepers—quite an achievement under the circumstances—and we'd missed at least another 50 strikes, rolls, boils, or what have you. We'd had bass action all right, but we couldn't understand what was wrong with their vision.

Discussing the unusual situation later with an old fishing friend, Cal Stone, a plausible explanation developed. I felt better when I learned he'd had numerous similar experiences.

Cal theorizes that the bass are seeing double plugs: the plug and its shadow in the clear, sunlit water. They charge the shadow instead of the plug and miss by the margin governed by the angle of the sun and the position of the shadow.

We had noticed the widest misses occurred when the sun was lowest, thus creating the greatest distance between the plug and its shadow. The bass apparently sight the lure in the air, strike as it lands, hence there is no sound to help them zero in, nor does the monofilament line help them find the plug.

After a series of subsequent cross-eyed bass incidents on Banks Lake in southern Georgia, I firmly believe Cal's theory. Fishing this 12,000-acre, cypress-studded lake with Chuck Norton, an expert local angler, I encountered a repeat of the Little Lake Harris bass performance. Those Georgia bass charged the plug with miniature torpedo wakes behind them too, only to miss by a foot or more. Again, this was not the bedding season. But the water was gin-clear and the day sunny and cloudless, making long shadows possible. Instead of bringing in some lunkers, we brought in headaches and frustration.

Now, whenever I encounter a fishing day with these ingredients—crystal water and bright sun—I'm not surprised if the bass are somewhat off course. They may be spooky too, but it's the cross-eyed ones that give me ulcers.

Anyway, you certainly don't forget bass action like this, no indeed. ●

National Wildlife Week

March 19-25, 1972

WHAT MAY BE a wild idea to believe we can reverse environmental destruction to protect the bald eagle and create a quality life for man, but this country was founded on the wild idea of independence, and not so long ago a wild idea took us to the moon. Ecology is another wild idea that will work."

So says film star-ecologist Robert Redford, who has been named national chairman of the 35th annual National Wildlife Week, March 19-25, sponsored by the National Wildlife Federation and its state affiliates.

The 1972 Wildlife Week theme, "Ecology: A Wild Idea," focuses on the fact that wildlife is a part of the environmental crisis and is dependent upon quality natural surroundings.

The bald eagle, emblem of the United States, is in serious trouble. Its plight symbolizes the fate of 100 other American wildlife species threatened by extinction due to man's interference with the natural world.

Imagine yourself watching a bald eagle high above the trees, drifting on the wind, first diving, then soaring to the clouds. Imagine the thrill of flying free like an eagle. You would feel the wind against your face as if you were riding downhill in a roller coaster. As you watch, the eagle drops from the sky, snaps her wings, slows, and comes to rest on her massive nest high in a lonely pine tree and views the land below.

Being face to face with a wild eagle is like meeting a celebrity, someone really important. The bird's white head speaks of dignity and knowledge—knowledge of things wild. What secrets of nature does the eagle own, and how many springs has she glided over? Her keen eyes have probably seen animals you barely know.

Suddenly she spreads her huge wings, and her yellow legs push her off into the wind. The eagle flies upward, then drops down over the nearest ridge and out of view.

Maybe it's just a wild idea that we can still have a world where people can watch wild eagles. Pesticides, pollution, and destruction of habitat are pushing the eagle and other animals closer and closer to disaster. Yes, it's a wild idea that we can clean up the environmental mess we're in, in time to save eagles. But, you know, it was a wild idea that we could bring back the whooping cranes when there were only 15 of these great white birds left in the world. But we're doing it. It was a wild idea that the buffalo could be brought back from the brink of extinction, and it was a wild idea that



Photo By Carson Baldwin, Jr.

Effective immediately, the Federation will pay a \$500 reward to a person providing information that was of substantial assistance in obtaining a conviction for shooting a bald eagle (*Haliaeetus leucocephalus*) in violation of 16 USC 668.

The claimant must request the reward in writing to the National Wildlife Federation, 1412 16th St., NW, Washington, D.C. 20036, within six months after conviction. If more than one bald eagle was shot by the convicted person, \$500 will be awarded for one bird representing the total number shot.

the trumpeter swan, down to 50 birds, would again wing across America's skies in flocks. So maybe, just maybe, it's not such a wild idea that we can clean up the environment for us, for eagles, and for all life.

A healthy environment won't come easy. It won't happen overnight. It won't happen at all unless we are willing to make personal sacrifices and changes in the way we are used to living. It's a wild idea, but people must develop a new life style, an eco-conscience, if we're going to lick the pollution problems we are up against. Not until everyone is willing to reduce his share of the environmental damage will young eagles and young people have a bright future. We may always see eagles in zoos, on coins, and on everything from antique clocks to our postage stamps. But wild eagles, free eagles—it's up to us!

"Throughout Wildlife Week, the National Wildlife Federation and its 3 million members will be urging people throughout the United States to consider their relationship to the natural world and make personal commitments to help achieve environmental quality," says C. Richard Tillis of Tallahassee, state coordinator for environmental education for the Florida Department of Education, and state chairman for Wildlife Week 1972.

That's what ecology is all about—a wild idea. ●

Shot Range

HUNTING

shotshell pellets will fly farther than most shooters think they will—all hunters should learn the maximum killing range and flight range



By EDMUND McLAURIN

OPENING DAY of the dove hunting season in Florida last October was almost like a summer day. It was clear, hot, and windy where I hunted.

There were enough birds on the move to keep things interesting, but there were also plenty of inquisitive ants, flies, gnats, and other assorted skin-stinging bugs. I slapped often between moments of action, and sometimes I slapped without checking cause or effect.

When I returned home, I showered and, as usual, scrubbed with a brush and strong soap to discourage any red bugs from setting up house-keeping.

It was not until I was getting ready to retire for the night, however, that I noticed a small, dark spot on my right forearm. At first, I thought it was a small tick already embedded. Closer examination disclosed, to my surprise, that I had been struck by a stray shot sometime during the afternoon! It was a No. 7½, I judged, after picking it out of my flesh with a sterilized needle.

The pellet traveled a long distance before it struck me. I had purposely taken a shooting station well away from other hunters sharing the field, not only for safety, but because prior checks of dove flight patterns over that particular field had convinced me my spot would be a good one. The single pellet that lodged in my forearm must have come from a gun at least 190 yards away.

Besides the initial propelling force, it is possible the shot that struck me was helped along by the wind, which was blowing in my direction from the nearest rival hunter. In any event, the tiny lead ball had sufficient energy remaining to hit and penetrate just below the skin.

Pellets fired from a shotgun have a potential maximum flight much longer than most shooters imagine. They mistakenly think of shotguns as strictly short-range performers, forgetting actual ballistics and the direct effects of velocity and helping wind.

Shotshell manufacturers, however, and the people who lay out trap and skeet ranges know the potential flight of shot. That's why most club ranges have a minimum of 300 yards firing zone, for safety.

True, round shot, whatever their size, by reason

of their shape and encountered air resistance, have much less actual flight range than elongated rifle bullets, but even so, round shot can cover surprising yardage.

Whereas a bullet attains maximum free flight with the rifle muzzle pointed up at a 30-degree angle, shot loads get their greatest distance when the muzzle of the shotgun is at an angle of approximately 42 degrees. Also, larger, heavier shot retain velocity over considerably longer ranges than the smaller sizes.

You could load two 12 gauge shotshells with the same type and quantity of powder, but with, say, 1⅛-ounce of No. 7½ shot in one and the same weight of No. 4's in the other. Fire each from the same full choke-bored shotgun, at the same firing angle, and under identical atmospheric conditions, and the heavier No. 4's will travel approximately 77 yards farther than the No. 7½'s.

However, this does not necessarily mean you can kill a bird 77 yards farther (with a load of No. 4 shot) than the maximum effective range of a load of No. 7½'s!

Also, some shooters mistakenly believe that if they shoot high velocity shells, killing range will be increased directly proportional to the increase in pellet velocity. Not so!

As the ballisticians at the big shotshell manufacturing companies can tell you, resistance of air against an object passing through it is not directly proportional to the speed of the object. Sometimes, even slight speeding up can greatly increase encountered air resistance. Also, any fired projectile that exceeds the speed of sound—1100 feet per second—will generate a sound wave that takes some of the projectile's own velocity to produce, then afterward introduce its own peculiar form of added resistance to the moving projectile.

Effective *killing range*, whatever the size of shot, is never as great as potential *flight range*. To kill feathered game, shot must have sufficient remaining energy on arrival at the target to penetrate the bird's vitals, with induced shock and imparted killing "wallop." That's one reason waterfowlers who get good results at decoy ranges using No. 7½'s and No. 6's change to No. 4's for long

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range pass shooting. The heavier shot retain their velocity better.

The shell makers and U.S. Army Ordnance people have pretty accurate figures on the maximum ranges of different shot sizes. Their findings are based on long hours of careful ballistics research.

Commonly accepted as a computing formula that closely substantiates firing range tests is one known as the *Journée Formula*, mentioned in both the Army Technical Manual 9-1990 and the NRA FIREARMS & AMMUNITION FACT BOOK. This simple formula calls for multiplying the diameter of a particular shot, always expressed in a decimal fraction, by 2200. The result is the maximum flight range, in yards, for that size shot.

The following table shows how the formula works out for different sizes of shot in standard shotshell loadings fired from a full choke gun with the muzzle angled to achieve maximum flight range:

Shot Size		Diameter (in.)	Maximum Range (yds.)
00	Buckshot	.33	726
0	Buckshot	.32	704
1	Buckshot	.30	660
#1	Shot	.16	352
#2	Shot	.15	330
#3	Shot	.14	308
#4	Shot	.13	286
#5	Shot	.12	264
#6	Shot	.11	242
#7 1/2	Shot	.095	209
#8	Shot	.09	198
#9	Shot	.08	176

Keep in mind that these are maximum free flight ranges, not practical killing ranges.

Buckshot and rifled slugs seldom realize full potential flight range because these loads are usually released with shotgun muzzle parallel to the ground or even pointing slightly downward (as from a treestand). Under such field firing conditions, trajectory path and gravity greatly limit range of free flight.

Most riflemen are conscious of bullet trajectory, and know how to take maximum advantage of its curve rise and fall over various hunting ranges, but few shooters ever stop to consider that a load of fired shotshell pellets also take curved flight. Degree of "drop" over a specific range, of course, is directly influenced by sustained initial velocity of the shot pellets while traveling the distance.

Most standard 12 gauge shotshell loads, giving muzzle velocities between 1200 and 1255 f.p.s. to small shot sizes commonly used for upland gunning, "drop" pretty close to four inches over first 40 yards of range. At the 50 yard point, the shot in flight will have dropped another inch, or about five inches maximum.

This degree of trajectory is almost the same for No. 1 buck, a large pellet load favored by Florida deer hunters. Fifty yards from muzzle the 16 pellets in a load of 12 gauge No. 1 buck will average close to 5 1/10 inches "drop". Retained striking energy, however, will be much greater than that of the bird shot sizes, because of larger shot diameter and better sectional density.

In flight, shot do not travel in compact mass, but in a relatively wide and long column.

Suppose you shoot at a duck fifty yards away using a load of 1 1/4 ounces of No. 6 shot in a 12 gauge, full choke gun. The column of shot will be about four feet in diameter and approximately twelve feet long!

All the shot will not get to target point at the same time; neither will all of them get there with the same velocity.

Generally, the larger the shotgun bore from which a load of shot is fired, the shorter is in-flight length of the shot string.

How did we get the numerical designations for the different small sizes of shot popular with shot-gunners? No one seems to know—not even the shotshell makers.

However, it is believed that in the early history of shot-making some mathematically inclined individual found that subtracting the diameter of each shot size from the number 17 would result in a series of consecutively numbered designations. For example, subtract .09" (the diameter of a No. 8 shot) from 17 and you get 8, the shot size. Or take a No. 4, which has a diameter of .13", subtract .13 from 17 and you get 4.

The formula works for all shot sizes from No. 9 to No. 1, as a few minutes with a pencil and paper will verify.

You can apply the formula in reverse to obtain the exact diameters of the different shot sizes. Just subtract the known shot size from 17, add the decimal point, and you've got the diameter. Example: Using a No. 6 shot, the equation would be 17 minus 6 equals .11, the diameter of a No. 6 pellet.

ANYONE WHO SHOOTS a great deal knows ammunition is expensive. Few serious trap and skeet shooters, for example, can afford to shoot factory-loaded shotshells all the time. Most of them reload their empties.

Besides being economical (you can shoot three times as much for the same money), reloading enables them to experiment with different powder and wad combinations—within strict limitations, of course—until the best one for a particular gun is found.

The same holds true of riflemen and handgunners who shoot a lot. Their reloading interest is



Lee's new loader is complete with die that resizes case, holds it for neck reaming, and aligns it to seat bullet.

not just based on economy, but a desire to know and utilize the best performing loads in the calibers used.

Reloading of a centerfire cartridge case comprises the successive operational steps of decapping, primer pocket cleaning, neck or full-length case resizing, internal neck reaming, removal of case from body die, trimming case to correct length, chamfering of case neck, recapping, charging case with powder, bullet seating, and, when necessary, bullet crimping. (Actually, all these various operations can be done in less time than it takes to list them on a typewriter.)

Except for full-length case resizing, you can perform all these reloading operations with an inexpensive (\$9.95) Lee Reloading Kit, made by Lee Custom Engineering Company, Hartford, Wisconsin 53027.

The loaded ammunition you produce will be just as good as that turned out by an expensive and bulky bench-mounted reloading press—except that production will not be as fast. Even so, you can easily load two or three boxes of ammunition in one session.

Lee's \$9.95 model reloading kit comes with five basic component tools for one particular rifle or pistol caliber or shotshell gauge. The powder measure furnished is preset for correct charge. You can't go wrong if you follow instructions and use only recommended powders.

For the shooter who wants to reload super-accurate ammunition of precise uniformity, and do it just a little bit easier, there is an 11-piece kit known as the Lee Target Model Loader (\$24.95). Among furnished reloading aids are a cleverly de-

signed priming tool, a case neck reamer, and provision for micrometer measurement in the body-die assembly for precise bullet seating depth. This last feature alone is worth the difference in the prices of the two kits, in my opinion.

Either model is guaranteed not to wear out during your lifetime. You can't get a better deal than that!

Although the Lee reloading kits come complete, the firm also makes a variety of inexpensive accessories that can be used in supplement. Among the different available accessories there is a 13-unit powder measure kit, an automatic pocket primer cleaner, case neck chamfer tool, case trimmer, and case polishing spinners that can be chucked in home electric drill. A new item is a low cost bullet moulding set. With it a home reloader can pour his own.

If full-length case resizing is a necessary reloading step for you, then I recommend that you add a Wilson or Forster-Appelt case resizing die as an accessory, for very little money. One of either make is a practical accessory to have within reach.

First manufactured only for reloading of shotgun shells, the Lee reloading kits now also embrace more than a hundred different rifle and pistol calibers, and new ones are being added as firearms manufacturers bring out new cartridge chamberings.

Some well-liked black powder rifle calibers were dropped from commercial manufacture when smokeless powders came into the ammunition picture. A primary reason was that many of the black powder rifles were simply unsuited, and potentially unsafe, for use with the new higher pressure loadings. Further, some of the black powder loads that manufacturers decided to discontinue making could not compare with newcomers in velocity and long range killing energy.

However, many fine old black powder rifles remain in existence and quite capable of good performance.

To use these rifles, owners have to turn to home reloading of still good ammunition cases.

In the Lee line of reloading tools there are a number of kits for black powder rifle calibers. With one, a black powder enthusiast can concoct ammunition that is both safe and accurate.

What modern calibers are most popular with reloaders?

Sales of tools and dies indicate that the .30-06, .243 Winchester, .308 Winchester, .30-30, .270 Winchester, and 7mm Remington Magnum rank highest among rifle calibers. Leaders in the handgun cartridge category are .38 Special, .357 Magnum, .44 Magnum, 45 ACP, and 9mm Luger. For shotshell reloading, more die sets are sold for 12 gauge than any other shotgun shell size. ●

The Purple Martin

By GENE SMITH

OF ALL THE BIRDS that come and go with the seasons, the Purple Martin receives the heartiest welcome from human admirers when he arrives in this country every year from his wintering grounds along the Amazon in Brazil. And the cheery feeling seems mutual, for the friendly, gregarious martins, the largest of the swallows, appear glad to see familiar places and faces once again. They chatter and chirrup excitedly as they inspect former nesting sites, usually specially built martin houses with space for an entire colony.

Early February is the customary arrival time of martins in Florida. The dates of their appearance at a given locality vary by only a few days from year to year, and *the day* is always something of an event in the lives of those who maintain martin apartments.

In primitive times, purple martins nested in hollow trees and holes in cliffs and banks. It was the Indians who discovered that these graceful, bug-eating birds would nest contentedly in artificial homes right in the midst of their villages. They hung dried gourds with holes cut in them in the tops of slender saplings, or, in the absence of suitable trees, erected poles with crossbars lashed to them, from which the gourds were suspended.

According to Alexander Sprunt, Jr., this practice was continued by southern plantation Negro families and eventually spread among rural people in every state, martins being both pleasant and beneficial. Hanging martin gourds persists to this day, at least in areas where gourds are still grown or can be purchased. More and more, however, well-made wooden and aluminum martin houses are replacing gourds, both in the city and the country.

The amazing homing instinct of purple martins, and other swallows, is, of course, legendary. One account in ornithological literature reveals that a colony of martins arrived at their former home to find the owner had been delayed in re-erecting his martin house after its annual cleaning and refurbishing. The writer said the birds were fluttering and hovering in the empty air *at the precise spot and elevation* that the house should have been, chattering noisily all the while!

Another interesting account, in this regard, tells how the impatient martins, circling about excitedly during the raising of the house, actually alighted on it while it was only half way up and rode it the rest of the way!

It is probably best to await the first arrivals (the males appear first to scout and claim their old quarters) before putting up a martin house. It



Photo By Gene Smith

Purple martins aren't particular about where they nest—town or country. An apartment house, like this aluminum factory job, provides ultimate in martin living quarters.

helps prevent occupancy by unwanted species such as house sparrows.

A martin house should be situated in a fairly open area of the yard or garden, 15 to 20 feet above the ground. Unless there is a lake or pond within a mile or two, drinking water should be provided. (Martins feed over water and are able to drink and bathe on the wing.)

The house may have as many rooms as the owner wants to build or buy. From six to 24 are common. Each room should be 6 × 6 × 6 inches inside and have a 2¼-inch circular door cut 1½-inch above the floor level. Martins like a porch, but it's optional. A slight roof overhang helps protect nestlings from the elements. Commercially-built houses usually sport a perching rail along the length of the roof.

Much has been written on the feeding habits of purple martins, and apparently the oft-quoted statement that "martins eat 2,000 mosquitoes a day" is not scientifically founded. True, they are almost exclusively insectivorous, but studies have shown their primary preferences are dragonflies, horse- and houseflies, beetles, wasps, stinkbugs, and a few moths, butterflies, mosquitoes, and bees. (Martins are not major enemies of worker honeybees, as is frequently held.)

While most of the martin's feeding is done in flight, they sometimes hop about and take ants and other terrestrial insects, and also spiders. There is one record of their relishing crushed eggshells scattered on the ground beneath a martin house. They even fed bits of shell to their young.

The normal clutch is four or five eggs, pure white in color. Two broods may be produced in a season. Incubation has been variously recorded at from 12 to 20 days. By late September, the young are strong and the leisurely southward migrations from Florida begin. ●

For that BIG ONE

that didn't

get away



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.....8 pounds or larger

CHAIN PICKEREL

.....4 pounds or larger

BLUEGILL (BREAM)

.....1 1/2 pounds or larger

SHELLCRACKER

.....2 pounds or larger

BLACK CRAPPIE

.....2 pounds or larger

RED BREAST

.....1 pound or larger

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The catch must be weighed and recorded at a fishing camp or tackle store within the state by the owner, manager, or an authorized agent of the respective establishment.

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Raccoon

Photo By Carson Baldwin, Jr.

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